CONVENTION EXTRA

National Paint, Oil and Varnish Association
American Paint and Varnish Manufacturers' Association
Federation of Paint and Varnish Clubs

Oil, Paint and Drug Reporter

November 29, 1932
Volume 122. No. 24

The Market Authority Since 1871
Chemicals-Dyestuffs-Drugs-Paints-Oils-Fertilizers

12 Gold Street
New York, N. Y.

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Oil, Paint and Drug Reporter

The Market Authority Since 1871
Chemicals-Dyestuffs-Drugs-Paints-Oils-Fertilizers

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The Paint, Oil and Varnish Associations Meet

Economic, merchandizing, and technical problems confronting the paint industry were thoroughly considered at the conventions of the National Paint, Oil and Varnish Association, the American Paint and Varnish Manufacturers' Association, and the Federation of Paint and Varnish Production Clubs held in the Mayflower Hotel, Washington, D. C., from November 11 to November 16. Decisions were taken, which, it is hoped, will stabilize the manufacture, sale, and distribution of all types of products.

In connection with the production men's sessions, a paint industries show was held—the first of its kind—consisting of a highly effective display of materials, equipment, and accomplishments in the technical field.

The two major bodies held a single joint session, the first in two years, and although the committee to consider corporate merger of the two associations was continued to study possible amalgamation further, it was decided that such action now would not result in greater economies or in higher efficiency than now obtain through the consolidation of associational activities and rigid budget supervision put into effect by the reorganization plan adopted at Toronto in 1930. The splendid functioning of headquarters and bureau staffs in the face of curtailment and difficulties was cause for repeated comment.

All addresses before the two major conventions emphasized a single point: The paint industry has faced and must continue to face a complexity of problems, not alone arising from within itself, but created by disruption of the world economic system as a result of the war. The hurdles that still must be taken were described with frankness and vigor by Willard E. Maston, president of the National Paint, Oil and Varnish Association, by Horace S. Felton, president of the American Paint and Varnish Manufacturers, and by three distinguished guest speakers, David Lawrence, publisher of the "United States Daily;" Merle Thorpe, editor of "Nation's Business," and E. J. Cornish, president of the National Lead Company. These speakers evoked much constructive discussion from the floor.

At the conclusion of the meetings, it was generally felt that the paint industry was in a splendid condition to carry through to the time when a general upturn in business would reflect itself in the sales of paints, varnishes, and kindred materials, but it was also felt that there must not be the slightest relaxation of collective effort through the instrumentality of the trade associations. Not only must the national bureaus and committees continue to function vigorously, within budgetary limits of the moment, but the work must be picked up and carried on by paint groups throughout the country. The emphasis on this vital need for group action was particularly strong.

An analysis of the addresses of the officers and the recommendations of key committees shows the desire and need for the following activities:—

1. Cost accounting. Nothing is more important at this time than a scientific system of cost accounting with rigid budgetary control. Certain uneconomic practices, it was felt, could be attributed directly to lack of knowledge of this subject, and in this connection there was much discussion of the custom of price-slashing and of rendering bids obviously far below cost. A cost finding survey of the whole paint industry in conjunction with the Department of Commerce is under consideration.

2. Distribution. Here is another subject which calls for a scientific survey.

3. Government competition. The activities of the paint and other industries in combatting this serious and growing menace to individual enterprise were revealed and every member was urged to continue to give fullest support to further effort to eliminate it.

4. Unfair competition. Much has been accomplished through the work of the unfair competition bureau and its efforts and legal services should be sustained and utilized by all members of the industry.

5. Simplification. The regulations are now in effect and every effort should be made in the coming year to give publicity to the program and to enlist the cooperation of all in preventing violations.

6. Stabilization. A score or more of problems have been developed in the work of the stabilization committee, which should have the support of all in working out solutions.

7. Promotion activities. Save the surface and clean up and paint up campaign bureaus have maintained a tremendous amount of valuable business-building work, despite great obstacles, and must be vigorously carried on within budgetary limitations.

8. Trade associations. The paint trade associations have been honored in the past year with a high award for the efficiency and purpose of their work, and they must be sustained not only in their national aspects but through a greater backing by paint groups in specific localities. Personal participation of directing heads of paint concerns should be given wherever possible in local club work.

The joint session of the two major bodies was held Tuesday afternoon, November 15, under the chairmanship of Horace S. Felton. David Lawrence reviewed the trend of costs since 1914 which have precipitated the present turmoil. William Zinsser made a plea for the full and complete application of the code of ethics, and there were reports from Ernest T. Trigg, chairman of the educational bureau, who presented a brief case to Dr. H. A. Gardner, director of the scientific section, who then reported on his work; from Ludington Patton, T. J. McFadden and M. Q. Macdonald, all dealing with unfair competition; from C. W. Eastwood on the save the surface work; from Charles J. Roh of the amalgamation committee; and from Representative Andrew L. Somers on legislative matters.

The National Paint, Oil and Varnish Association business meetings were crowded into three sessions Wednesday, November 16, with Willard E. Maston, presiding. Mr. Maston in his presidential address dwelt on the many accomplishments of the association and its workers in the past year, and pleaded for greater activity in local clubs.

"More officials of member companies are needed in local trade association work," he declared. "Their active participation in local as well as national activities will go a long way toward the stabilization of their own business and the affairs of the entire industry.

"Time tried and constructive trade associations—and in this group we have rightfully earned a place—find that they are now going through a test which will try the strength of every rivet of the ship. The test is a world-wide, all inclusive readjustment of business systems, business formulae and business ideals. In a very true sense we might consider all the years of our experience as a rehearsal for the 'supreme test' which is now being watched by the greatest and most important audience that can be assembled—the public."

He warned against letting the pendulum of economy in trade association work swing too far lest it cripple and hamper beyond repair.

The notable feature of this session was the address by E. J. Cornish on business conditions, which he analyzed in detail from the point of view of commodity prices and their effect on the world. The situation had been and was serious, he said, but he concluded on a note of optimism:—

"The morale of our people has been greatly improved. In this country, at least, there is no demand for injustice or confiscation. The promises of all parties to do what they can to reduce taxation, ameliorate conditions and prevent hardship; the assurance that nothing will be done by government that runs contrary to those laws of trade which reward labor adequately, demand equal opportunity, secure justice and encourage higher morality, has given to all of our people hope and courage, and is causing the problems of the day to be met with faith and confidence."

The club programs were dealt with by C. J. Caspar, and Dr. R. A. Plumb made an inspiring address urging greater support within the industry for the clean up and paint up work.

In his presidential address to the single session of the American Paint and Varnish Manufacturers' Association, Tuesday forenoon, November 15, Horace S. Felton paid tribute to work which had been done, emphasized the importance of group meetings, cost accounting, and price-cutting, and then presented a suggestion for a five-year plan, as follows:—

"My last recommendation is that a group of men, either our board of directors or a special committee, take it unto themselves to give serious consideration to a working plan for our association over a period of five years. With the coming of each new administration I feel there is a tendency to change the scope of the work to adapt it to individual thought. A long range study of the probable economic factors which are apt to affect our industry and the methods we should follow to meet these changes is a study which I think challenges the thought of any group. It will not be an easy job but I think it will ultimately be worth while."

Important reports on the subject of returned goods, simplification and stabilization also were given at this session.

George V. Horgan, general manager, and Charles J. Roh, treasurer, reported to both associations, the former outlining the vast amount of work which had been done in the face of difficulties, and the latter reporting an excess of income over expenditure, through close control under the new financial set-up.

The Federation of Paint and Varnish Production Clubs met Friday and Saturday, November 11 and 12, under the presidency of James E. Kortum. Original papers were presented on technical subjects. The dry color committee reported on the adoption of tentative specifications for testing dry color shipments.

The federation held its annual banquet November 12, but the other two bodies dispensed with all forms of entertainment which had featured conventions in previous years, the single diversion being an informal dinner Wednesday night, November 16, at which outgoing and incoming officers spoke briefly.

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The New Official Families

National Paint, Oil and Varnish Association

President

Samuel R. Matlack, of George D. Wetherill & Co., Philadelphia.

Vice-Presidents

Canadian Zone.—W. W. Schoales, of the E. Harris Company, Toronto.

Central Zone.—W. F. Marks, of the National Lead Company, Milwaukee.

Eastern Zone—Frank Bownes, of the Frank Bownes Company, Chelsea, Mass.

Southern Zone.—D. C. Burnham, of the Pittsburgh Plate Glass Company, Atlanta, Ga.

Western Zone.—C. B. Woodruff, of W. P. Fuller & Co., San Francisco.

Treasurer

Charles J. Roh, of the Murphy Varnish Company, Newark.

General Manager

George V. Horgan, Washington.

Member of the Executive Committee

(Three-year term)

R. B. Robinette, of the Tropical Paint Company, Cleveland.

Samuel R. Matlack

Samuel R. Matlack, the newly elected president of the National Paint, Oil and Varnish Association, is president of George D. Wetherill & Co., paint and varnish manufacturer, Philadelphia. He is also president of the True-Tagg Paint Company, Memphis, Tenn., and of the George D. Wetherill Varnish Company, Camden, N. J. He has been connected with the paint and varnish industry for more than thirty-eight years.

Mr. Matlack was born in Moorestown, N. J., May 26, 1876, the son of George and Marianna (Roberts) Matlack. His parents were prominent members of the Moorestown community of the Society of Friends (Quakers), and the son has followed them in this affiliation. Also, he has continued to live in Moorestown, his residence there being at 210 West Main street.

Samuel Matlack started to work at the age of sixteen years. Previously he had attended the Moorestown Friends School and the Westtown Boarding School, Westtown, Chester county, Pa. He was but eighteen years old when he entered the employ of the Wetherill concern of which he is now the head.

Mr. Matlack has long been an active figure in the organizations of the paint and varnish industry. He has worked on many committees, and he has been recognized with earlier honors in the associations. He was president of the Paint Manufacturers' Association in 1922, and he served two terms as president, in 1906 and 1907, of the Philadelphia Paint and Oil Club.

Mr. Matlack is a member of the Masonic order. He is chairman of the finance committee of the Moorestown Friends School, and a member of the board of managers of the Friends Hospital. He is also a member of the Union League of Philadelphia and of the Kiwanis Club. He relishes a game of golf on occasions and is a member of the Niblic Golf Club and the Moorestown Country Club.

Samuel R. Matlack and Miss Marion W. Stokes were married September 1, 1904, in Woodbury, N. J. They have one son, Robert W. Matlack, twenty-two years old, and one daughter, Elizabeth S. Matlack, eighteen. Mr. Matlack, as a sideline or domestic-industry interest, devotes himself to the making and marketing of Matlack's pure cream ice cream.

Directors

Representing Local Clubs

(To serve three years)

Chicago.—R. M. Neumann, of the New Jersey Zinc Sales Company.

Columbus.—R. S. McKay, of the Dean & Barry Company.

Dayton.—L. H. Vinson, of the Irvin, Jewell & Vison Company.

Indianapolis.—W. H. Gerke, of the Sargent-Gerke Company.

Memphis.—M. G. Heins, of the True Tagg Paint Company.

Minneapolis-St. Paul.—V. Wurtele, of the Minnesota Linseed Oil Paint Company.

Nebraska.—G. C. Cunningham, of the Pioneer Glass & Paint Company.

Portland, Ore.—C. B. Van Houten, of W. P. Fuller & Co.

Rochester.—J. F. Garner, of the Pittsburgh Plate Glass Company.

St. Louis.—F. W. Knoke, of the American Zinc Sales Company.

Savannah—R. L. Clancy, of the Southern Cotton Oil Company.

Individual Members

Arthur Brown, of the Imperial Color Works, Glens Falls, N. Y.

George L. O'Brien, of the O'Brien Varnish Company, South Bend, Ind.

American Paint and Varnish Manufacturers' Association

President

J. F. Kurfees, of the J. F. Kurfees Paint Company, Louisville.

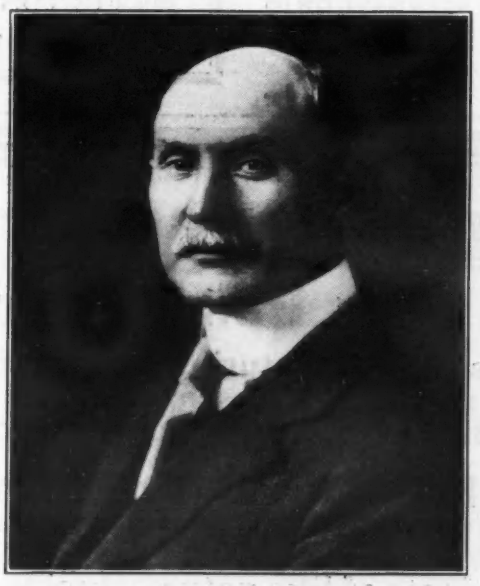
Vice-Presidents

Horace S. Felton, of Felton, Sibley & Co., Philadelphia.

William C. Dabney, of the Dabney-Jones Company, Louisville.

General Manager and Secretary

George V. Horgan, Washington.



James F. Kurfees

James Frank Kurfees, elected president of the American Paint and Varnish Manufacturers' Association at its 1932 meeting, is president of the J. F. Kurfees Paint Company, Louisville, Ky. He founded this business in 1897, and is one of the "Old Guard" of the paint industry.

Mr. Kurfees was born in Macksville, N. C., November 21, 1866, the son of J. P. and Mary (Roberts) Kurfees. It is interesting that the family name of his mother is the same as that of the mother of Samuel R. Matlack, new N. P. O. & V. A. president.

As a boy, James F. Kurfees attended the county district schools in his native town, three months in each year from 1872 until 1885. That was the extent of his formal schooling. He was a farmer's son, and he remained on the farm until 1888 when he went to Louisville. In the following year, he entered the employ of the Peaslee Gaulbert Company, manufacturer of paints and varnishes, Louisville. He retained that connection until 1896, and in 1897 he went into business under his own name. When his business, the J. F. Kurfees Paint Company, was ten years old, Mr. Kurfees ceased to be the sole owner through distributing some shares to employees.

Mr. Kurfees is affiliated with the Church of Christ. He is not a member of any fraternal organization, but he belongs to the Pendennis Club, Louisville, and the Petoskey-Bay View Country Club, Bay View, Mich. He "plays a little golf."

James F. Kurfees and Miss Pearl Tatum were married in 1896 in Louisville. They have one daughter, Mrs. Alene T. Calveard, and one son, James F. Kurfees, jr., who is twenty-five years old. The family residence is at 235 South Galt avenue, Louisville.

Treasurer

Charles J. Roh, of the Murphy Varnish Company, Newark.

Secretary Emeritus

George B. Heckel, Philadelphia.

Directors

L. H. Conklin, of the Flood & Conklin Company, Newark.

W. H. Gerke, of the Sargent-Gerke Company, Indianapolis.

William H. Jarden, Jr., of the McCloskey Varnish Company, Philadelphia.

Dwight P. Joyce, of the Glidden Company, Cleveland.

Wells Martin, of the Martin Varnish Company, Chicago.

Oliver S. Orrick, of the General Paint Corporation, San Francisco.

Joseph D. Patton, of the Pittsburgh Plate Glass Company, Milwaukee.

Dr. R. A. Plumb, of the Truscon Laboratories, Detroit.

Wilbur Rice, of the United States Gutta Percha Paint Company, Providence.

Federation of Paint and Varnish Production Clubs

President

E. E. Sparrow, of the Imperial Varnish & Color Company, Toronto.

Vice-President

Frank C. Atwood, of the Craftex Company, Boston.

Secretary

George B. Heckel, Philadelphia.

Treasurer

Roy B. Anderson, of the Brooklyn Varnish Company, Brooklyn.

Members of the Executive Committee

F. L. Theurer, of the Pittsburgh Plate Glass Company, Chicago.

E. V. Ladd, of the Densol Paint Company, Cleveland.

F. A. Wertz, of the Varcraft Company, Pottstown, Pa.

Eugene E. Sparrow

Eugene E. Sparrow, whom the Federation of Paint and Varnish Production Clubs at its 1932 meeting chose as its president, is director and works manager for the Imperial Varnish & Color Company, Toronto, Ontario.

Mr. Sparrow was born in Toronto, June 7, 1899. His father was M. W. Sparrow, L.D.S., D.D.S.; his mother, Bessie H. (Ecclestone) Sparrow. He was educated in the common and high schools in Toronto, and in 1916 he entered the employ of the Imperial Varnish & Color Company, of which his uncle, J. M. Sparrow, is president. He has been director and works manager since 1929.

Mr. Sparrow has been active in the affairs of paint technology. He has been president of the Toronto Paint and Varnish Production Club. His active interests are varied. He is a member of the Ontario Industrial Accident Prevention Associations, a director of the Canadian Society of Cost Accountants and Industrial Engineers, and a former president of the Ontario Chemical Industries Safety Association. He is a member and former president of the Kinsmen Club, and is affiliated with the Methodist Church.

Eugene E. Sparrow and Miss M. Muriel Slee were married May 23, 1923, in Toronto. They reside at 245 Gulfdale road, Toronto, and have two children, Constance Muriel Sparrow, who is six years old, and Robert Eugene Sparrow, who is two. Mr. Sparrow is a fisherman and plays handball. He is interested also in literature and music.

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LONG ISLAND CITY NEW YORK

PROCEEDINGS OF THE
National Paint, Oil and Varnish Association
FORTY-FIFTH ANNUAL CONVENTION
Washington, D.C., November 14 and 16, 1932

Monday, November 14

Executive Sessions, Monday Afternoon

The executive committee of the National Paint, Oil and Varnish Association attended a luncheon meeting in the Hotel Mayflower, Washington, at half past twelve Monday, November 14, to discuss routine matters and proposals to be considered at the open convention sessions. Those in attendance were Willard E. Maston, president; and Messrs. R. B. Robinette, P. C. Frayser, D. W. Figgis, F. J. Sampson, Charles J. Caspar, Frank Bownes, Dr. R. A. Plumb, Charles J. Roh and Horace S. Felton; also, George V. Horgan, general manager; and Robert Shannon.

At half past two o'clock, the full board of directors attended an executive session, there being present in addition to the members of the executive committee named above, the following four past presidents:—Messrs. P. H. Callahan, F. P. Cheesman, E. J. Cornish and E. V. Peters. Also, these directors:—R. M. Neumann, M. G. Heins, E. H. Hancock, S. French Reeves, W. B. Elwang, W. J. Pitt, John Henry Coon, R. M. Roosevelt, Adam E. Daum, T. A. Flynn and R. W. Lindsay.

Mr. Horgan outlined the action of the executive committee on the resolutions presented to it.

Wednesday, November 16

Opening Session, Wednesday Forenoon

The forty-fifth annual meeting of the National Paint, Oil and Varnish Association, Inc., held in the Mayflower Hotel, Washington, D. C., convened at nine forty-five o'clock, Willard E. Maston, president of the association, presiding.

President Maston:—It is a great deal of pleasure to welcome the delegates and members to the forty-fifth annual convention of the National Paint, Oil and Varnish Association.

This has been called an economy convention, but I would like you to know that there is no economy in the warmth of the welcome and the appreciation to the delegates and members that are here in Washington this year.

The first order of business is to welcome delegates from our fellow associations, the National Paint Distributors. The delegation from that body is headed by their secretary, Edward Drake. Is Mr. Drake in the room?

Reception of Delegates

Paint Distributors

Edward R. Drake (Chicago): — Our president this year comes from Fargo, North Dakota, and it is so far away that he felt he could not come all the way to Washington to attend this function. He is trying to keep his expenses down and keep in black ink, which he was up to two weeks ago. He said he didn't know whether he was going to be able to stay there until the end of the year or not.

As usual, it is a great pleasure, Mr. President, for the distributors to be here. I think we have our quota just about equal to your quota this year, and throughout the year there has been considerable activity on the part of our association. I am very happy to be informed this morning, by Mr. Horgan, that your associations here have worked out a program where there will be greater co-operation between the manufacturers and the distributors, and that is something that is vitally important these days.

I do not need to tell you gentlemen how important it is, but we hope to have a hook-up where we can all go in the same direction and not be crossing wires at any time, and through this closer working arrangement between the two associations we will be able to function better.

President Maston—We are glad to have you, Mr. Drake. It is true that this year plans are being worked out, as you have already been informed, that these two associations might work more closely together. I am confident that results will be shown before the year is out.

It is a great deal of pleasure to welcome the delegates from the International Master Painters' Association, and it is particularly gratifying to be able to introduce to this convention the son of one of the most loyal attendants this association has ever had, Mr. Dewar, of Pittsburgh, son of Mr. John Dewar, whom we have all known and loved so well. Mr. Dewar!

Master Painters and Decorators

John B. Dewar (Pittsburgh):—It is a great pleasure for me to be here and to bring to you the greetings from our International Society of Master Painters and Decorators.

Our international president, Arthur Grant, of Los Angeles, is very sorry, indeed, that he could not return the courtesy of the visit which you paid us last year, Mr. Maston. We enjoyed your visit and we certainly did profit by your very excellent talk.

At this time we often gain a tremendous amount of knowledge and benefit by these meetings of trade associations, and I know that in this meeting your deliberations and your subjects discussed will indeed help the industry as a whole and improve our own part in it, and especially as we hope within a short time that we will certainly see a rejuvenation of business.

We have a great problem in our own international association at this time. We are undertaking to rejuvenate our own society and to modernize it, to bring it up to the high standard which we feel a trade association should have in these hard times. We spent considerable time last year in this city undertaking this program, and we have it now under way for either the consideration or the adoption of our own society.

I would like to ask your members, Mr. President, if in their visits to our members throughout the country and in their contacts with them, they would spread the gospel of a well organized trade association, and to show to our members the many benefits that can be obtained by having a proper organization to conduct its trade activities.

We are having quite a battle in our own organization from this viewpoint. We have, of course, many members who feel that it is wise to leave well enough alone and to continue along the path that we have been traveling in the past, but many of us feel that such a step is not a step in the right direction at this time. We were guided in our deliberations last year by Phillip Gott, of the Chamber of Commerce of the United States. I remember distinctly Mr. Gott announcing to us that of all the trade organizations that he was acquainted with, he felt that your organization was the best established, the best managed, and showed more benefit to its members than any other that he knew, and I see that that is brought out by the medal which you have received this year. I am indeed very happy to be here, and I extend again our greetings to your association.

President Maston: Thank you very much, Mr. Dewar. I would like the members of this association to know that I represented the N. P. O. & V. A. at the International Master Painters' annual convention at Los Angeles in February. I was very much interested in their program. It is just as Mr. Dewar said, they have many problems similar to ours in organization.

This association, particularly its member clubs, can do a great deal to stimulate interest in that great body and I am confident, Mr. Dewar, that we will do that.

The next order of busines is the roll call of clubs.

Roll Call

Atlanta	0
Baltimore	3
Birmingham	0
Buffalo	2
Central New York	0
Chicago	4
Cincinnati	3
Cleveland	0
Colorado	0
Columbus, Ohio	0
Dayton	0
Detroit	1
Golden Gate	0
Indianapolis	0
Kansas City	0
Los Angeles	0
Louisville	3
Memphis	1
Milwaukee	0
Minneapolis-St. Paul	0
Nebraska	0
New England	3
New Orleans	0
New York	11
Philadelphia	13
Pittsburgh	5
Portland, Ore.	0
Puget Sound	0
Richmond	1
Rochester	0
St. Louis	2
Savannah	0
Toledo	2
Toronto	1
Utah-Idaho	0
Washington	0

President Maston: The next order of business is the president's address. I am going to ask the Central Zone vice-president, Dr. Plumb, to take the chair.

(Dr. Plumb assumed the chair during the reading of the president's address.)

Chairman Plumb: We will now

Willard E. Maston
The Presiding Officer

have the pleasure, gentlemen, of hearing this exceedingly interesting report from our president.

Address of the President

President Maston:—Another year finds our association business craft safe in port, ready for the annual review of equipment, officers, crew, and cargo. Gathering in conventions, such as this, at an appropriate time of the year, when we can leisurely review the journey of the past twelve months, provides the proper setting for the necessary adjustment of our affairs, and an opportunity to adapt ourselves anew to the conditions which confront us.

It is a pleasant kind of work we do as we go over the forty-five year old stately ship of business, to make sure the seams are tight and the boilers sound. We can get real and lasting satisfaction out of the labor, which is necessary to refill the bunkers, to freshen the equipment, and to install new and enthused officers ere we once again head for the open business sea and point into the winds of industrial affairs.

Into our log has been written the daily record of the past year's cruise. Skies were certainly not so clear or sunny as we have generally experienced, and paying cargoes were decidedly hard to locate. The voyage took us through troublesome storms of long duration, and many times it was difficult to check the whirling compass and keep to the charted course. However, there were numerous bright days and unforeseen events that cheered us onward, and none gave us more encouragement than the decision to meet this year in joint convention with the American Paint and Varnish Manufacturers' Association. In addition, a very competent joint committee is now conducting a study to learn if our two associations might serve the industry more effectively if we operated as a single association. Progress in this direction must naturally be practical and thorough, and to visualize clearly the attendant possibilities, as well as to evaluate them properly, will require considerable time and painstaking consideration.

As much as I should enjoy commenting on the many interesting notes in the log, I feel that this is a duty best handled by our general manager. Mr. Horgan's report covers virtually all of the Association activities, and during the course of our sessions, we shall hear detailed reports from the chairman of a number of the committees, outlining just how they have geared their work to meet the pressing problems confronting them. Supplementing this will be found in printed form individual reports of all committees, so arranged that the subject in which you are most interested may be easily located and read when convenient. To the chairmen and individual members of these committees we are everlastingly indebted. Their cheerful service has been inspirational to the entire membership.

Tribute to Departed

Into the log, we have recorded with heart-felt sorrow the passing of a number of members who sailed with us from Atlantic City last year. Some of these served loyally in obscure positions, while three were honored past presidents of our association:—

George E. Watson, our president in 1895,
Arthur S. Somers, our president in 1912, and
H. S. Chatfield, our president in 1930.

These splendid gentlemen and outstanding citizens gave unstintingly of their time that the National Paint, Oil and Varnish Association might stand at the very top of trade associations in service both to industry and country. To those of us who had the high privilege of working with them, their passing was like the fading of a golden sun whose warm and kindly rays had freshened and enlivened all things that rested in its path. To the memory of these gentlemen, we could pay no greater homage than to sail resolutely forward in the task of service to which they so untiringly dedicated themselves.

No president could hope for a more loyal set of officers and committees or a more energetic and willing membership crew than sailed with me this past year. All have done their part, and comparatively few have left the ship before our journey was over. Especially am I grateful for the constructive counsel and creative assistance of the zone vice-presidents. The office of zone vice-president, I am convinced, will grow in importance and effectiveness as the years go on. To illustrate, I call particular attention to the thorough manner in which the western zone convention was organized and successfully staged in San Francisco by the zone vice-president, Garry M. Goldberg. Mr. Goldberg and his committee are to be heartily commended for this splendid achievement. I missed the enjoyment of being with them, a pleasure which fell to the lot of past-president Robinette, who cheerfully gave of his time to represent me while I was undergoing some minor repairs.

Another equally impressive illustration rests in what was done in New England, the birthplace of the N. P. O. & V. A. Here, vice-president Bownes sponsored a "paint dealer night" at Boston, an occasion that was deservedly one of the outstanding business-building events of the entire year.

The Canadian zone vice-president, Mr. Schoales, has done stellar work in keeping bright and lasting our association contacts in the northern commonwealth. And southern zone vice-president Sampson's energetic swing around the southern circuit had the effect of reviving and strengthening association interest in that section. These are all striking examples of the constructive work my fellow officers have rendered in stimulating the activities of member clubs.

Fitting into this picture is the club program committee, so ably guided by that veteran, Charles J. Casper. Programs this year have been presented promptly as scheduled, and credit for much renewed enthusiasm in National Association affairs rightly goes to this commit-

"WHY not find out?"

There are two ways to find out whether your package is helping or hindering sales. You can question consumers. Or you can trust to luck, and let sales-figures speak for themselves.

And you can change to the right package *before* the wrong one plays you false—or you can wait till you're forced to change by the mischief already done.

The American Can Company does not say that packaging questions must be put up to consumers. But it does say that packages must be built *for* consumers — first, last and always. It does not advocate change just for the sake of change—but change for the sake of sales. It does not say that the container is the biggest thing in selling. But it does say that it deserves as much thought as any other phase of your program — and that its creation, its manufacture, should be put in the hands of experts.

Canco knows what makes a package successful, and how to endow a package with the qualities that create sales. And Canco will gladly help you find out whether you have the wisest one for your product. Send us your present package. If we think it is right, we will tell you so. If not, we will suggest how it can be improved. This service is without obligation. We urge you to use it.

AMERICAN CAN COMPANY

230 PARK AVENUE
NEW YORK CITY

CANCO

tee. The work of this committe has been invaluable.

Trade Promotion Work

Our trade promotional committees, "save the surface," and "clean up and paint up," have performed effectively under greatly reduced budgets. Chairman Eastman and his committee have kept our slogan "Save the Surface," very much alive, despite the cessation of our national advertising program. The widely known and readily recognized brush-sweep of our industry still continues to help sell our products, and the courage of the "save the surface" committee is an invigorating example for all of us. The "clean up and paint up" bureau continues steadily to guide many hundred local campaigns throughout the country at a cost per unit which is trifling compared with the value received. In addition to the well organized activities at headquarters, the chairman of this committee, Dr. R. A. Plumb, central zone vice-president, has personally appeared before many of our clubs with a result-getting message concerning the almost unlimited possibilities of the "clean up and paint up" program. He has revealed this movement as more than a mere club activity; it is an undertaking of profit to every individual member, for it undoubtedly creates new markets for our products, as well as expanding old ones. It is a distinctive movement, too, in that it can be repeated at regular intervals without losing its freshness. Finally, it is a program which readily lends itself to being merged with other promotional programs, giving them, in turn, greater strength and greater chances for success.

Our alert budget and finance committee has seen to it that our expenditures have been kept in line with income. This sound practice has thrown some shadows across the ship, for we have found it necessary regretfully to dispense with many loyal workers of the headquarters staff, as we balanced the budget downward. As yet no important association activity has been eliminated, but this is due in a very large measure to the willing and whole-hearted way in which the general manager, Mr. Horgan, and his co-workers have met a difficult situation through the development of properly adjusted and feasible working plans for the uninterrupted operation of our great business plant in the Gregg Memorial building. For their sympathetic and effective co-operation, we are indeed grateful. We must recognize, however, that there is a point beyond which curtailment ceases to be practical, and the old law of diminishing returns takes hold. We must see to it that the pendulum of retrenchment does not swing in too wide an arc.

When Will It Be Over?

How far our industry, and we might fairly include all business, must go before we are once again on solid footing and prepared to advance is a matter of arresting attention and deep concern. To discuss the many phases of the depression would be a test of your patience I have no right to attempt. Anyone who has managed to live through the whirlwind of political expositions of what it is all about, the deluge of verbalism from the tireless pens of panacea originators, and the complicated graphs of efficiency experts and statisticians—all of whom seem capable of cleverly handling either side of every problem—anyone who has lived through these ordeals has weathered the worst that is likely to happen. Perhaps, when it's all over, we shall conclude that too much was said and too little was done.

Certainly, we have work to do, and our particular task at this time is to keep our trade association activities properly synchronized to meet the problems of the day. Undoubtedly, present business conditions and general unrest combine to make a troubled era which is unprecedented in the lives of any of us here in this convention. It is a challenge to our ability to carry on. In the face of adversity, with a courage well tested in the fire of business evolution, we must keep moving onward. More importaant, however, than to keep moving, is to make sure we are moving in the right direction.

During the past year I visited many of our member clubs, and physical limitation was my only reason for not contacting each group which composed our nation-wide organization. The sincere and earnest manner in which they all received me will remain as a happy memory forever. And I want to stress that with few exceptions, I found that their interest in both the local and national affairs of our industry had been sharpened by the low state of all business. While our membership total has dropped, for reasons which are well understood and appreciated, there has been a compensating return of keen interest on the part of an increasingly large number of members who in more prosperous times gave little serious thought to the real value and true purpose of a trade association.

More officials of member companies are needed in local trade association work. Their active participation in local as well as national activities will go a long way towards the stabilization of their own business and the affairs of the entire industry. Probably the most important thing that I could say or do at this convention would be to emphasize this one point; if principals and owners or executives of those companies which comprise our membership will give their personal —not delegated—attention to local trade association activities, results will not only be tangible and encouraging to the groups, but these results will immediately be reflected in the progress of the national association.

Readjustments Are World-Wide

During a half century of steadily widening opportunities, the trade associations of industry have come to be generally accepted as an important factor in the development of American business. It is also agreed that many associations which sprang into bustling life during the past decade did nothing other than add to the general spirit of "whoopee." Most of this type have either faded from the picture or are making desperate efforts to adapt themselves to a new order of things. Time-tried and constructive trade associations—and in this group we have rightfully earned a place —find that they are now going through a test which will try the strength of every rivet in the ship. The test is a world-wide, all-inclusive readjustment of business systems; business formulae; and business ideals. In a very true sense, we might consider all the years of our existence as a rehearsal for the supreme test which is now being watched by the greatest and most important audience that can be assembled, the public. In thoughtful silence and hopeful expectancy, they are patiently waiting to learn just how far a trade association intends to go in working for and protecting their interests.

Fortunately, we are not performing before a critical audience. Rather, I believe, it is most liberal and very willing that we continue to occupy an influential part in our industrial life. It wants us to succeed. To check the fairness of this statement, consider your reaction when you, as an individual, sit as the public and ask how a trade association protects your interest. You want it to stand for honest merchandise and service, honestly manufactured and honestly sold. You are willing to co-operate in helping reach that goal.

The public will, undoubtedly, expect much more of trade associations in the future. They will make it their business to know more about an association's motives and activities, and in particular, they will be interested in the code of doing business under which the association operates. This is but the natural evolution of the whole trade association idea. No longer will any association find it practicable or profitable to plan solely in the interest of its members. The trade association has now reached that point where its very life depends upon the continued development of co-operative plans for all units in every industry, in order that they may lawfully unite to stimulate and develop a composite market, to serve adequately the legitimate needs of that market, and transcending all, to prevent, so far as possible, the manufacture, the distribution, and the use of merchandise that betrays the purchaser. Many years ago our association accepted this principle of good business and adopted as a slogan "In the Public Service." Associations, and especially national groups, which have not accepted this ideal, or do not plan to adopt it immediately, have, in my opinion, little chance to survive.

Associations Must Not Fail

If trade associations fail in the crucial test they are now undergoing, after having planned and steadily builded for so many years, it is difficult to visualize just what form of organization can take their place. If they fail as a business planning medium, are we to awake some day to find ourselves in the hands of some all-powerful governmental board with authority to impose its arbitrary will upon all industry? Trade associations should not and shall not fail if those who have been workers in years of development continue their financial and physical support. They shall not fail if those who in the past have been content merely to be passengers will now join the crew and give freely of their talents. They cannot fail if that great number of indifferent business men can be persuaded to realize that the admonition, "In union there is strength," is not just a time-worn proverb but is an accurate summation of the experience of men since the dawn of civilization and the origin of society. Trade associations can do yeoman service for all business men, but first these men must realize that such help is not a free gift—it must be paid for in time and money.

The National Paint, Oil and Varnish Association, with its 37 member clubs throughout the country and in Canada, has an opportunity to build and widen their activities that is the envy of many major bodies of America. Our local clubs are more and more developing into energetic local trade associations of paramount importance and service to their particular communities. It is most gratifying to see how they are reaching out to contact and stimulate to greater effort and success the distributor, the dealer, and the master painter. Few industries come closer to the daily existence of the general public than the men who manufacture, distribute, and apply paint and varnish. Our local paint trade associations have unlimited opportunities to work with other trade groups and public officials interested in civic beauty, greater healthfulness, improved property values —activities which penetrate deeply into not merely the industrial, but the economic and even social fabric of our daily life.

Our national association will, I firmly believe, continue to serve its membership best by doing everything possible to create and develop local paint trade interest and enthusiasm, and by encouraging, through constructive counsel, the inevitable activities and progress which spring from these two factors.

Just as our member clubs grow in stature and importance in business activities, so, too, shall we grow as a national trade association ready to assume a responsibility and a leadership which will demonstrate to the public that the trade association plan, as we understand it, is practical idealism—practical idealism that results in direct, lasting, and far-reaching benefits for all.

Recommendations

Fortunate are we that in the turmoil of the times, we need not seek out untried equipment for the colossal task lying before us. We have at our disposal forces which, if used in greater measure, can enhance our efforts substantially, both in speed and effectiveness. I should like to recommend that we appraise more carefully and employ next year to far larger extent:—

First:—Our Simplification Program. Profits for all grow in direct proportion to the thoroughness with which we drive this activity nearer to its ultimate goal.

Second:—Our Stabilization Program. Herein lies a stringent test of an industry's ability to regulate itself. Be sure to read and thoroughly acquaint yourself with the detailed report of the able committee now directing this activity.

Third:—Credits and Collections. Inadequate attention to this phase of all business has brought a chain of events that need correction. Our committee has done splendid work. Renewed vigor in supporting and working with them will pay returns in the sound progress both of your association and your own business.

Fourth:—The Unfair Competition Bureau. We are blazing a new trail in co-operative adherence to business principles anchored in idealism and service. Government is keenly watching this development in all business. We must not and will not falter.

Fifth:—Our Trade Promotional Campaigns. These merit and call for renewed attention and development. "Save the surface" cannot long survive without nourishment. "Clean up and paint up" is virtually custom-built for times like these, and should receive unprecedented support from every member, everywhere, in the all-important business year of 1933.

Sixth:—The Local Paint Club. Here rests the very foundation of our association structure. Here lie glowing opportunities for widened markets through closer, result-getting contacts with all divisions of our industry and the public itself.

In a few hours, we shall weigh anchor and be off on another journey over uncharted seas. Our craft has proved

George V. Horgan
The General Manager

staunch and seaworthy, and our officers and crew are equal to any squall, of whatever violence, that lies before us. Darkness and turbulent waters shall not daunt us, for we believe that beyond the horizon lies calmer weather, and eventually we shall reach sunny skies and placid seas. We will, with firm courage, sail on and on, and 'ere our voyage is done, our log will carry a record of paying cargoes for us, and, more important, greater effort and achievement "in the public service."

Horace S. Felton (Philadelphia):—I move that we express our appreciation for this bright and sparkling address, that it be received and spread on the minutes, and that the recommendations therein be concurred in.

(The motion was seconded.)

Chairman Plumb:—What was the action of the board on this report?

General Manager Horgan:—The motion has really anticipated it. That was exactly the action of the executive committee and the board of directors on this report.

Chairman Plumb:—I think we have listened to one of the finest reports and messages that has ever been presented to our convention. It is outstanding not only in its completeness, but is certainly a very inspirational message, coming from a great pilot who has carried us so successfully through a difficult year.

(The motion was put to vote and carried.)

(President Maston resumed the chair.)

President Maston:—The next order of business will be the report of the general manager. George V. Horgan.

Report of the General Manager

General Manager Horgan:—Any report I would submit after that magnificent address of our president would be an anti-climax. The by-laws require that the general manager shall submit to the annual meeting a review of the year's work. It is, naturally, a detailed report and covers each specific activity that we are engaged in. You all have a copy of the printed report, and while the presidents of the two associations and your general manager have endeavored not to duplicate too much, there were some of these important activities that we felt all of us should treat with, even though in a brief manner.

Mr. Maston has pointed particularly to the stabilization and simplification programs which are treated in my report. There is another special committee that has been working this year on a subject that has become very troublesome in our industry as well as others, and that is the subject of returned goods. There is a report on that from the committee and it is covered in my report.

I want to mention, in passing, that we should not overlook the work that is being done constantly and actively by our traffic bureau. Our traffic committee is composed of traffic experts from various outstanding concerns in the industry and is headed up by an expert traffic man who is employed by the associations. Just at present they are working on the subject of securing a reduction in classification rating on paints, varnishes and lacquers to fourth class. The last report I had from our chairman is that there are very good indications that they will be successful, and, of course, that will mean a tremendous saving to all of you men who are engaged in shipping. Mr. Laveille, chairman of our traffic bureau, is attending meetings at this very moment in New York.

Trade Mark Bureau

You heard the wonderful report yesterday of our legislative committee, the business promotion committee, the western zone convention activities. I cannot overlook special mention of the continued usefulwork of our trade mark committee. The trade mark bureau is being used more every day by the members as they appreciate the importance of it. This year, to be exact, we have listed in the bureau records 3,500 additional names, which brings the total listing in our trade mark bureau to approximately 24,000, and we received during the year hundreds of inquiries on trade mark letters, the selection and use of trade marks.

We are co-operating with and have the co-operation of the United States Patent Office on all this work, and it has been said, and we take a good deal of pride in the fact that our trade mark bureau ranks among the best conducted by any trade association.

The club programs have been referred to and will be dwelt on more in detail by the chairman of that committee this afternoon.

The report of the membership committee recites a rather satisfactory condition when we consider the present-day situation. Every organization, trade, civic and social, has been beset with the tremendous problem of losses in membership this year, but our loss has been comparatively small, and the report of the treasurer indicates that we are decidedly in the black on our receipts. We have no new member clubs to report in the association this year, but we have three in prospect with indications that next year these clubs will be formed and affiliated with the parent association.

It will interest you all, I know, to hear that this convention marks the forty-fifth anniversary of this great association, the forty-fifth annual convention. As was stated yesterday, it also marks another milestone in the industry, in that it is the silver anniversary of the Scientific Section so ably conducted by Dr. Gardner.

Government Competition

One matter that the association has vitally interested itself in this year is that of government competition in business. You have heard a great deal about that during the meetings this week. You heard the able talk of Mr. Thorpe yesterday, and it has been dealt upon by other speakers.

Briefly, I will say that our associations after sending questionnaires to the entire membership, were able to collect sufficient data to present a brief to the Shannon congressional committee on this subject. We are not content to rest with just the filing of this brief, but we are carrying on the collection of additional data. The procedure of this congressional committee is, in addition to holding hearings in Washington, to conduct regional meetings throughout the country. This week they are having such a meeting in Chicago. Our association is represented at all of these regional meetings and our observers report to association headquarters what takes place, so that we, at headquarters, are informed on the situation as it is developing all over the country.

It was a very significant fact at the first hearing that your general manager, Dr. Gardner and Mr. McFadden attended in Washington, that up to that time fifty-one industries had filed protests against the competition they were suffering from the government. Artificial limbs was one, rather an interesting fact.

No report of this character would be complete without a mention of the budget, and in this connection it has already been said that downward revisions have been made in our operating expenses. To be exact, twice within the last fifteen months it has been necessary for our budget and finance committee to revise the budget downward, and as your president has stated, it has also meant a curtailment in the staff at headquarters, so that those who are remaining in our work have naturally been obliged to assume a great deal of additional responsibility, but that is a condition that has existed in all business today.

Co-operation of Staff

At this point, I want to express appreciation of the very willing co-operation that has been extended by those employees who are being retained in departing from the routine of their particular jobs and assisting on any kind of work which has been urgent and necessary of prompt disposal.

At a recent convention of the American Trade Association Executives, held in Atlantic City, practically every speaker who addressed the sessions stressed the present great importance for co-operative effort through the agencies provided by trade groups like ours, and while some of the clouds seem to have lifted, the economic storm has by no means subsided and therefore it was also stressed that it was more necessary now that trade associations should not relax their diligence, but with a united effort, and only through such effort, could come the results which are not possible through individual effort.

About six weeks ago, I sent out a questionnaire to 200 other national trade associations, with the idea of ascertaining what activities they had been obliged to drop since the falling off of business, and if any had undertaken new activities. I will just briefly recite some of the replies that came in to those questionnaires.

Seventy-eight national trade associations indicated no curtailments; forty-four indicated no new activities; five reported that they had disbanded and were wholly inactive. Most of the replies indicated that associational forces were

WARNING to PROPERTY OWNERS

TODAY a letter came to my desk that deeply impressed me. It was written by a woman—the mother in a typical American family. Her little home had been saved from foreclosure by a coat of new paint, for which a part of their meager savings had been paid.

These few gallons of fresh paint had so revived the appearance and enhanced the value of the property that the mortgagee had consented to renew the loan . . . and the little home was saved.

I could not help thinking of the *thousands* of homes and buildings that are shabby and unattractive today due to several years of neglected painting; of the millions of home owners who, because of reduced incomes and enforced economy, have been obliged to sacrifice painting for taxes, interest, assessments, to say nothing of food, clothing, heat and other essentials of comfort and health.

You have seen these paint-starved houses and buildings, as have I. They are everywhere about you. Perhaps your home is included.

Do you understand what they signify? Do you realize what will happen to wood or metal that is literally naked of paint if these houses and buildings face the attack of another season of rain, snow, ice, and frost?

Never in the history of our country has the situation been paralleled. Property owners face an added burden of expense amounting to millions of dollars *for repairs and replacements* next spring.

And the crisis, in my opinion, will be reached *this coming winter* when paint of four, five, and even six years exposure to the weather will be unable to resist the elements—when badly weathered wood and metal will be easy prey for rot, rust and decay.

Today the big question facing thousands of property owners is plain. It is *"paint or pay."* Either you must invest *a little* this fall in new paint or you must take the risk of paying many times the cost of paint to repair the damage done by rot, rust and decay this winter.

Even at the sacrifice of other things, have your house or buildings completely repainted now. No investment you can make will pay better dividends. And nothing you can buy will make you and your family *feel* so uplifted and cheerful.

If you cannot arrange to do a complete repainting job now, at least *give the badly weathered places a coat or two of protecting paint.*

Look especially, to the window sills, thresholds, outdoor porches and steps; the joints of porch railings and palings; the bases of pillars; the edges of eaves; the roof; the gutters and down spouts. These are the *vital spots* where water lodges—where ice and frost settle—where rot and rust attack first.

A few dollars' worth of good paint, applied now, will protect these vital spots—will tide you over this crucial winter. And it will probably save you a much greater expense for repairs and replacements next spring and summer.

Under existing conditions, you may be tempted to buy a cheap paint because of its low price. I hope you will not make this costly mistake.

Even on sound lumber, inferior paint is a poor bargain. But on weathered wood, which is very porous, such paint is worse than useless. It gives you a false feeling of security and leaves you without protection.

Prices of well-known, established brands of paint are now the lowest in fifteen years. Enough good, dependable paint can be purchased for a few dollars to protect all the badly weathered surfaces on your building.

Again I repeat, do a complete job this fall if you can. But at least do the vital *exposed places* before it is *"too late."*

President
THE SHERWIN-WILLIAMS CO

This message to the property owners of America is sponsored by the following paint manufacturers and their dealers:

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DETROIT WHITE LEAD WORKS
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LINCOLN PAINT & COLOR CO.
THE LOWE BROTHERS CO.
JOHN LUCAS & CO., INC.
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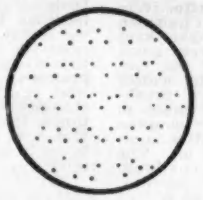
PENINSULAR PAINT & VARNISH CO.
THE SHERWIN-WILLIAMS CO.

This timely message of warning is being flashed to America's property owners through national magazines, more than 2300 newspapers and millions of dealer circulars.

The Earth Is Just a Bunch of Atoms



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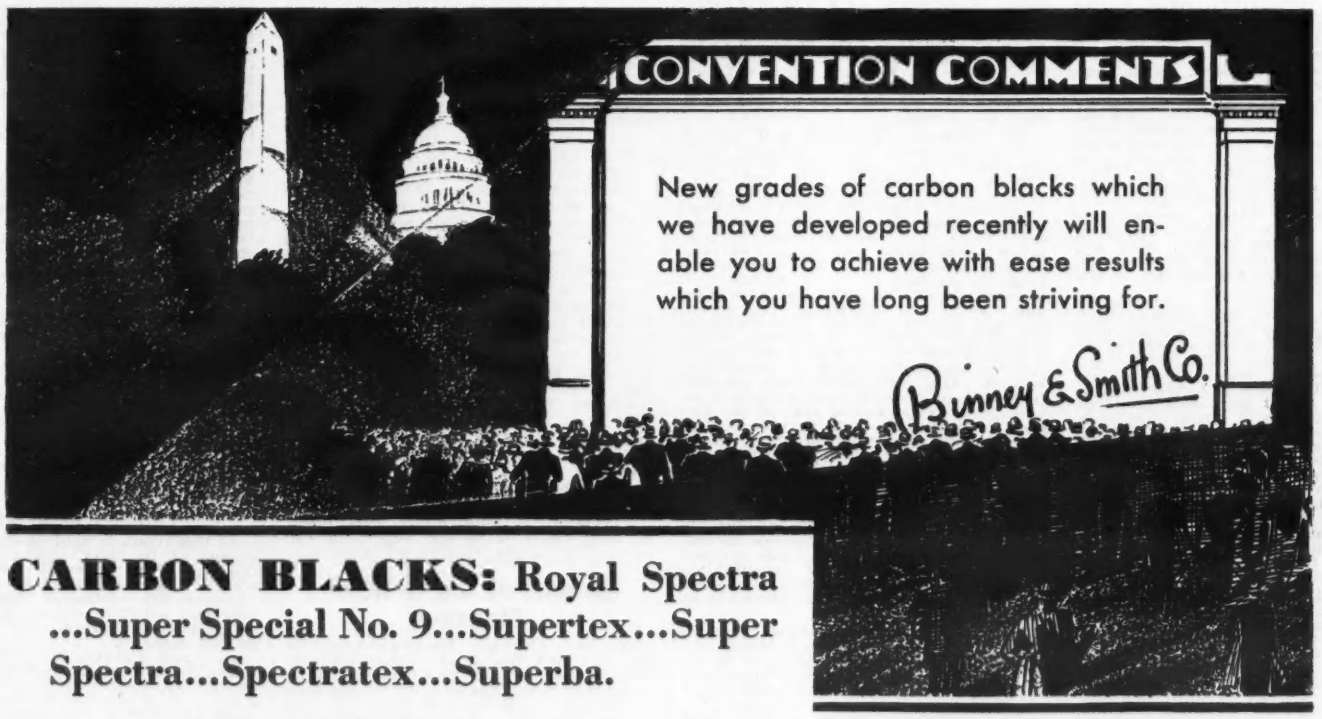
CONVENTION COMMENTS
New grades of carbon blacks which we have developed recently will enable you to achieve with ease results which you have long been striving for.
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working at higher pressure than heretofore, fifty percent operating with reduced staffs, but reporting as much or more work than in pre-depression times.

An interesting fact developed was that sixty percent of the replies indicated the members were calling upon their associations for more information and help than heretofore, and I might add that this has been our experience.

Before I close, I just want to again refer to something that has been spoken about several times during these meetings, but I think you will pardon me for doing so because we take great pride in this award that was made this year to the associations of our industry. It is the award given annually. It was contributed anonymously to the trade association that performs the greatest service to its membership. The committee rendering that award is composed of a very important group of men, headed by former secretary Lamont of the Department of Commerce, Owen D. Young, and men of that type. This is the third year that this award has been made. The first year it was given, our associations received honorable mention. Last year, we did not submit a brief, or did not compete for the award because we were right in the midst of our reorganization plans and curtailment and we did not think we had very much to brag about. But, this year we again entered the contest with the result that we got the first prize.

In closing, I want to acknowledge the continued support of the trade press. Without that, it would be very difficult indeed for us to put over a lot of the constructive movements that it is so necessary to have publicity given to throughout the country. In closing I want to thank the officers, the chairmen of committees, and all of the members for the fine support that they have given to me, which has made possible this report.

President Maston: You have heard the outline of the general manager's report, and as I have read it from beginning to end, I recommend that you carefully go over this report because it is very comprehensive. It gives us a clear, concise outline of the activities of the association, from end to end. I compliment Mr. Horgan on the thoroughness of this particular report.

What is your pleasure, gentlemen, with regard to the report?

(Upon motion regularly made and seconded, it was voted that the report be received.)

(The complete report of the general manager as distributed in printed form to the members is as follows.)

General Manager's Report in Detail

The association year now closing has been an epochal one in many ways. In common with every business, trade organizations have been beset with many vexatious prob'ems, and our own associations have not been immune. It is, however, a splendid tribute to the solidarity of our industry that it has remained united and alive to the importance of maintaining co-operative work to a larger degree during these parlous times than in periods of greater prosperity.

In reviewing the activities, accomplishments and services that have been undertaken, I will touch only upon the most outstanding factors which have engaged our attention.

Committees

It is gratifying, and I might add, rather surprising that the men on various standing committees have constantly and conscientiously functioned despite the necessity on their part for closer application to personal affairs. While, in the interest of time, the reading of committee reports will practically be dispensed with at our conventions, may I urge a careful reading at your leisure of these reports, which have been prepared and distributed. They constitute a picture of every phase of the industry; clearly indicate that the affairs of the association are in good hands; and that every committee appointee has dutifully carried on.

Here follows a resume of the more important activities:—

Educational Bureau of the Paint and Varnish Industry

The educational bureau has he.d quarterly meetings during the year with practically 100 percent attendance. This group of men assemble from all sections of the country—traveling at their own expense—to discuss the current problems of the industry. It will bear repetition, I believe, to state that the personnel of the bureau is composed of equal representation from the American Paint and Varnish Manufacturers' Association and the National Paint, Oil and Varnish Association. This outstanding committee works closely and constantly with association headquarters; consequently no matter of real importance to the industry is neglected, while in years past (previous to our present organized set-up), it was only at the annual conventions that all matters affecting the interests of our membership were acted upon. Also, the budget and finance committee of the two associations—which collects and allocates funds for the different activities—is composed of members of the educational bureau, likewise with equal representation from each association.

Stabilization

Several special committees have been appointed this year to cope with new problems confronting the industry, arising from depression and various highly competitive practices being indulged in. One of these, the stabilization committee, was created to study existing practices of a destructive character tending toward demoralization. A series of questionnaires has enabled the committee to crystallize some of these practices—such as the offering of free goods, one-cent sales, selling below cost, etc. It is not my intention to anticipate the report of this committee, but lack of appreciation would be shown if I did not commend the thorough and conscientious manner in which this committee has tackled an extremely difficult job.

Returned Goods

Another special committee is one studying the subject of "returned goods," a constantly growing menace to good business principles. This report merits your careful study, and as the committee will undoubtedly be a continuing one, suggestions from the membership will be helpful in reaching a satisfactory solution.

Simplification

The simplification committee has continued to promote the program adopted at last year's convention, which became effective September 1 of this year. While this program has not been universally put into effect by the various manufacturers who have subscribed to same, it was anticipated that some time would probably be consumed in readjustments by individual concerns, before the program in its entirety could be made effective.

May I again stress the constructive and forward-looking purpose of this program and urge its complete adoption at the earliest possible date by the members of our associations, who so emphatically approved and endorsed it one year ago.

Traffic

Our traffic bureau is constant in conducting effective work, and at the present time is diligently pursuing the important question of establishing a reduction in classification rating on paints, varnishes and lacquers to fourth class. Our committee is contacting with the various carriers and classification committees before whom hearings will be scheduled. It is very necessary that freight traffic executives be interviewed and their support secured. We can rest assured that this highly important matter will be aggressively followed through by our chairman, Mr. Leveille, and his associates.

Legislation

Due to the customary vigilance of our legislative committee, no federal or state enactments of a character detrimental to the industry have been placed on the statute books during the past year. The most excellent report of this committee speaks for itself.

Business Promotion

Our two major promotional campaigns—save the surface and clean up and paint up—notwithstanding the necessity for operating under greatly reduced budgets—are doing a surprisingly fine job as the reports of the committees in charge will indicate. Both of these activities will be discussed during the unfolding of our convention program.

Western Zone Convention—N. P. O. & V. A.

The western zone members of the National Paint, Oil and Varnish Association held their 1932 convention in San Francisco last July and in the absence of President Maston—due to illness—former president R. B. Robinette, of the executive committee, represented him. Mr. Robinette's subsequent report to association headquarters indicated that the western group dispensed with a tremendous amount of business during their three-day session.

Probably the most important feature of the convention was the session of manufacturers and distributors, which dealt with such vital subjects as:—Returned goods, service guarantees, terms of sale, etc.

A resolution was adopted to appoint a permanent secretary in the western zone, who will devote his entire time contacting the various paint club members in that district, and also establishing closer liaison with national headquarters, in order that action taken by the eastern members on questions constantly arising may be fully understood and wherever possible co-ordinated with similar action on the part of western zone members.

Trade Mark Bureau

During the past year our trade mark bureau has issued a supplement to the old trade mark list, containing 3,500 additional names—bringing the total listing up to approximately 24,000. Hundreds of inquiries were answered, pertaining to trade mark selection and use; the bureau continues to be one of the most serviceable activities to members that our association has to offer and everyone is urged to take advantage of its facilities whenever occasion arises.

Club Programs

The club program committee again this year has regularly compiled and distributed to all local paint clubs a series of enlightening and educational programs on subjects considered most helpful to the successful conduct of the local club. The indefatigable chairman of this committee, Charles J. Caspar, will review the subject at the Wednesday afternoon session.

Membership

The reports of membership committes of both associations recite a rather satisfactory resume when we consider present day conditions. True it is that losses in membership have occurred, but in most cases where resignations have been tendenred the reservation has been made that the member resigning—"has hopes of being able to rejoin when conditions improve."

Anniversary Year

The present convention of the National Paint, Oil and Varnish Association, Inc., marks the forty-fifth anniversary of the parent organization of the industry.

Also, another milestone is marked by the silver anniversary of the scientific section this year.

Federal Sales Tax

At the time the subject of a federal tax was being agitated in Congress last spring, our associations appointed a special committee to keep in touch with developments, and our industry was represented at the hearings in Washington. However, as the proposal was subsequently defeated, our efforts, along with those of other industries, were discontinued. In the event that this subject is renewed in Congress at the next session, we are prepared to present arguments from the standpoint of our industry.

Non-Exchange Agreement

Because of unusual conditions and effort put forth by over-zealous salesmen to place their line of products, many complaints have reached headquarters as to violation of the non-exchange agreement, although only one of these complaints has been supported by evidence for submission to our board of directors.

However, in view of the widespread tendency to indulge in the nefarious practice of "lifting stocks" we deemed it advisable to again solicit paint, varnish and lacquer manufacturers for signatures to our non-exchange agreement. Despite the fact that the majority of manufacturers were already signers, we secured a large number of additional signatures and the manufacturers further co-operated in our efforts by having their salesmen re-sign the salesman's non-exchange and anti-bribery agreements.

Government Competition in Business

Opportunity has finally been opened up for industry to present to a special Congressional committee factual data for respect to this form of competition about which so much has been heard over a long period of years. Shortly after the appointment of the Congressional committee, your general manager issued a letter to members of both associations, inviting them to present definite information with respect to this form of competition. Prior to the hearings held in Washington by the Congressional committee, preliminary regional hearings were held thoughout the country at which representatives of our industry were present and reported on same to the general manager's office.

As a result of the questionnaire sent to our membership, soliciting information as to just how and under what circumstances governmental departments competed with the paint and varnish industry, we were able to prepare a brief which was submitted to the Congressional committee at its first hearing held in Washington.

It is realized that this will probably be a rather lengthy investigation and we must not content ourselves with the filing of a brief. Following the Washington hearing, another communication was sent to all members, outlining in detail the manner in which government departments are competing with our industry, and requesting member concerns to instruct their employees to communcate direct with their respective senators and congressmen, enlisting their support in an effort to eradicate this form of competition.

We also requested approximately four hundred national trade association executives representing various industries to follow the same procedure with their membership and secured favorable response to this suggestion, with assurance from many such associations that they were already actively interested.

Budget

No report of this character would be complete without mention of the budget, and in this connection, I wish to advise that downward revisions in our operating expenses have twice been made during the past fifteen months and in addition the staff personnel at headquarters has been greatly curtailed.

At this point your general manager wishes to express appreciation of the willing co-operation extended to him by those employees who have been retained in departing from the routine of their particular jobs and assisting on any kind of work which has been urgent and necessary of prompt disposal. Obviously, with our reduced force, it is not always possible to render as prompt service as formerly when we had a larger staff. For example, in the case of requests for information on trade marks, which require considerable research, there is some unavoidable delay.

Unemployment

Mang agencies have come into being during the past year for the purpose of relieving unemployment. Our associations have been urged to take part in many of these movements, most of which include an appeal for funds. While the exigencies of our budget do not permit of making financial contributions, we have in practically every instance, where an investigation proved the plan to be worthy, offered the services of our clean up and paint up bureau, which has effectively tied in with its several thousand campaigns the strong urge for employing the idle during their progress. Also, in many instances, our clean up and paint up campaign bureau has furnished printed matter and posters to assist in this propaganda.

The Trade Association

At the recent annual convention of American Trade Association Executives practically every speaker, who came to address the sessions, stressed the present great importance for co-operative effort through the agencies provided by trade groups. While some of the clouds seem to have lifted, the economic storm has by no means subsided and it is therefore very necessary that trade associations must not relax in their vigilance but with faces turned toward the future and a united constituency, every effort should be exerted from which will come results not possible of attainment through individual effort.

A questionnaire was sent out by your general manager to the executive directors of approximately 200 outstanding national trade associations to ascertain what activities they had dropped since the falling off in business; what new activities—if any—had been undertaken, with the idea of securing some facts as to the manner in which other trade associations were meeting present day conditions.

78 associations indicated no curtailments;

44 indicated no new activities;

5 reported they had disbanded or were wholly inactive.

Most of the replies indicated that associational forces were working at higher pressure than heretofore, fifty percent operating with reduced staffs, but reporting as much or more work being done than in pre-depression times.

One interesting fact developed was that eighty percent of the replies indicated the members were calling upon their respective associations for more information and help than heretofore, which has been our own experience.

15 associations reported increased sales promotion activities;

5 reported elimination or sharp curtailment of associational advertising campaigns, but that sales promotion activities were being maintained in other directions;

Only two reported reductions in the scale of dues;

12 associations reported the elimination of the annual convention this year;

5 reported increased statistical service and an equal number emphasized increased cost accounting service;

8 reported increased credit service.

Analyzed—the replies indicated increased current associational interest in activities designed to increase or maintain sales. A keener interest in credits and statistics, and decided added interest in legislation matters, obviously due to the various tax measures under consideration affecting all industries.

A. T. A. E. Award

A notable happening in our association life was the honor conferred this year upon the paint and varnish industry in the form of the annual award given to the trade group, which accomplishes the most for its industry during the year. In competition with many other trade associations, your general manager filed an exhaustive brief with accompanying exhibits, and in the preparation of this brief received splendid co-operation from Dr. Gardner of the scientific section and Mr. McFadden of the unfair competition bureau.

On behalf of our associations, your general manager received the award, which was bestowed at the annual banquet of the American Trade Association Executives held at the Waldorf-Astoria Hotel, New York City, April 5, 1932. The award is in the form of a bronze plaque and the committee on award in presenting the trophy pointed out that it was given to our associations—"For successfully operating a comprehensive, well coordinated and effective program in the interest both of the public and of the industry."

The award committee consisted of the following gentlemen: R. P. Lamont, Secretary of Commerce; Owen D. Young, General Electric Co.; Merle Thorpe, Nation's Business; Francis H. Sisson, Guaranty Trust Co.; and Walter Dill Scott, Northwestern University.

This is the third year the award has been made, and the second time our assocations have been honored. In the first instance, we received honorable mention and this year—the major award.

Trade Press

Once again, it is a pleasant duty to acknowledge the continued support of the trade press in promoting the activities and purposes of our associations. We have had splendid publicity from them, not only through their news columns but in an editorial way. Their willingness to co-operate at all times is pronounced and most helpful.

In closing, your general manager wishes to express sincere appreciation to the officers, those who have served on committees, and the membership generally, for the fine support so generously accorded, without which it would not be possible to submit this report of accomplishment, and which I trust will meet with your approbation.

In addition, my gratitude and thanks to the staff at association headquarters for the manner in which they have met every obstacle and assisted me in carrying on responsibilities which have multiplied during the past year.

President Maston:—In the absence of the treasurer, Charles Roh, the report will be presented by Mr. Horgan.

Treasurer's Report

Mr. Horgan:—It is again my pleasure to report to you that notwithstanding conditions which brought about reduced income of $5,170.51 this year our association's reserves have not been needed.

Our appropriations to the educational bureau have been under our income.

Our income and expenditures for 1931-1932 and 1930-1931 are as follows:—

Income

	1931-1932.	1930-1931.
Memberships, club	$23,362.88	$26,429.20
Memberships, individual	1,080.00	1,060.00
Membership, 1929-1930, individual	.....	180.00
Totals	$24,442.88	$27,669.20
Other income—		
Interest	1,430.00	1,488.12
1929-1930 entertainment committee refund	.....	1,752.22
Trade mark bureau	.....	138.85
Totals	$1,430.00	$3,374.19
Income	24,442.88	27,669.20
Grand total	$25,872.88	$31,043.39

Expenses

Appropriation to Educational Bureau	$21,250.00	$28,690.73
Exchange and check ax	93.75	.....
Write-offs	44.28	.....
Totals	$21,388.03	$28,691.73
Excess income over expenses	4,484.85	2,351.66

This amount represents the total cost of 1930-31 operations. One quarter of the year was operated independently and the other three-quarters of the year under the educational bureau.

Our surplus now amounts to $49,349.57, and is made up as follows:—

Cash	$13,920.80
Liberty Loan bonds and interest	84,643.75
Accounts receivable	785.02
Total	$49,349.57
Clean-up and Pain'-up Campaign	13,478.00

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Our accounts were audited by Ernst & Ernst and were found in good order.

(The report of the auditors was then read as follows.)

Auditor's Report

As requested, we have made an examination of the books of account and record of the National Paint, Oil and Varnish Association, Inc., Washington, D. C., as of September 30, 1932, and submit here with our report.

Our examination included verification of the assets and liabilities of the association as of date above stated and a review of the operations for the fiscal year ended on that date.

Comments relative to the items appearing in the attached balance sheet and to the detail and scope of the examination follow:—

Cash on deposit, including the association's funds and national clean-up and paint-up campaign fund, was verified by direct communication with the depositors, the Riggs National Bank, Washington, D. C. All recorded cash receipts for the year were traced into the bank deposits. Recorded cash disbursements consisted of installments of the appropriation to the educational bureau of the paint and varnish industry, and federal check taxes which were supported with appropriate data.

Accounts receivable—Club and individual members were proved as to total by trial balance of the accounts and are shown in detail in a schedule included in this report. The allowance for doubtful accounts was considered sufficient to provide for probable loss in the collection of these accounts. We did not correspond with recorded debtors for the purpose of independent verification of their balances.

Marketable securities in custody of the treasurer were examined by us and found to be as shown on the balance sheet and registered in the name of the association. Accrued interest was proved by calculation and checks for semi-annual interest on the fourth Liberty loan bonds amounting to $680 due October 15, 1932, were received by the association and examined by us.

Accountability to national clean-up and paint-up campaign committee represents cash transferred by the committee to the association and segregated on the books of the latter as shown under cash on deposit.

We were informed that all liabilities of the association had been recorded on its books at September 30, 1932.

Changes in surplus during the fiscal year under review are accounted for in the attached analysis of surplus.

Operations of the association for the fiscal year resulted in an excess of income over expense in the amount of $4,484.85, as shown in the statement of income and expense.

Educational Bureau

Mr. Horgan:—Mr. Roh also asked me to briefly refer to his report on the educational bureau, because as most of you do understand, and for the information of those who don't, the educational bureau as constituted under the reorganization plan is made up of equal representation from both National Paint, Oil and Varnish Association and the American Paint and Varnish Manufacturers Association.

This is the first full year that the educational bureau has operated under the reorganization plan adopted at the Toronto convention in 1930, and this report, I believe, fully justifies that adoption.

The budget and finance committee has met at regular intervals to supervise and direct the budget and expenditures.

During the late spring of this year this committee was again directed by the educational bureau to revise this year's budget in view of the probably reduced income because of reduced business. This was done and the new budget has been operating the last quarter of this year.

Excess income over expenses, $21,699.09.

You will be interested, I know, to learn that we have 128 subscribers to the educational bureau fund. At the beginning of the year we had 138 subscribers, ten percent of whom have since cancelled their subscriptions because of existing conditions, but during the year five new subscribers were added bringing the present number of subscribers on the new plan to the above figure. It should also be added that we had fifty subscribers under the old plan, only two of whom have discontinued during the year. Under the circumstances I believe you will agree with me that this is very encouraging.

Our accounts of the educational bureau were also audited by Ernst and Ernst and found to be in good order.

I might say that the action of the other groups in connection with these reports was to receive them and to extend a very special vote of thanks to Mr. Roh for the work that he is doing. I don't think any of you men can really imagine the time that it takes to handle a job like Mr. Roh is doing. He is treasurer of both the associations, of the educational bureau, chairman of the budget and finance committee, and he is just doing one of the most detailed jobs, and doing it in a most thorough and conscientious manner, and as he has said himself when he has appeared in presenting these reports, he doesn't want any thanks for it, because he enjoys it and all that, but at the same time I know it goes without saying that this group will want to take the same action with regard to receiving these reports with a special vote of thanks.

Mr. Cheesman:—I move that the reports be accepted by the association, spread in full on the minutes, and that the treasurer be thanked by the association for his outstanding work during the year.

(The motion was seconded and carried.)

President Maston:—I would like to add my thanks to that motion. It has been a very remarkable work. They have insisted that the association work within the budget and they have seen to it that we did work within the budget. It has been a splendid report, and it must be a great satisfaction to the members to know the financial condition of this important trade body.

I would like to announce the names of the men on the nominating committee:—C. J. Caspar, M. L. Havey, H. A. Pinney, J. B. Keister, W. B. Elwang, T. F. Monypenny, and P. C. Frayser, chairman.

There is nothing in this year's work that gave me more satisfaction and pleasure than to sit in with the program committee to see what might be done to get on our program this year outstanding men in government, world economics, and present business affairs. You who were at the convention yesterday heard two of these men. I believe that you will say that the

Charles J. Roh
N. P. O. & V. A. Treasurer

committee made wise selections. I think you will agree after you have heard the address of this morning, you will want to make it unanimous.

Trying to select a man to talk about business conditions, we found it very difficult to locate a man who had been in the front line trenches of business during the past decade. We went outside of our industry, looked over the field, could not find a man that compared in our judgment with men that had been associated with us for the past ten or fifteen years. So we came home, right to our own association, decided we had just the ideal man, a man who during the past ten or fifteen years had had his feet on the ground. It is too bad more of us did not follow him closely. I am confident by his deeds, by his idealism, he is writing a brilliant page for American business, and what is more important to us as an association, I think he is writing an equally brilliant one for trade associations and co-operative movements generally. It is a great deal of pleasure and satisfaction for me to be able to present to you our fellow worker, past-president and president of the National Lead Company, Edward J. Cornish.

Mr. Cornish's Address on Business Conditions

For the first ten months of the year 1932, as compared with the first ten months of the year 1931, the sales (in pounds) of the following products, as shown by the returns made to the Department of Commerce, have decreased in percentage as follows:—

White lead-in-oil	27%
Dry white lead	39%

indicating that the painting industry is not satisfactory.

The sales of lead oxides have declined 26 percent, indicating less business in the storage battery and iron construction industries.

The sales of lead pipe and traps and bends, used in the building industry, are off 42 percent.

Sales of solder, used in the automobile and canning trade, are off 34 percent.

Sales of sheet lead, used largely in the chemical industry and manufacture of fertilizers, are off 41 percent.

Sales of babbitt metal, used wherever wheels are turning in factories, are off 35 percent.

Sales of type metal have held up well during the present depression, but are off 27 percent.

The lead-silver mines in the Rocky Mountains are closed, excepting in the few instances where the gold content makes operation profitable or where it is necessary to operate at a loss to prevent want and suffering of employees. The value of the ore produced in the lead-silver mines in the Rocky Mountains is the lowest for over a century. In the last century, when the United States Government was endeavoring to buy all the silver produced in the United States in order to help maintain the price of silver, lead as a by-product fell to $2.65 per 100 pounds. An average mine that would yield 10 percent lead and 10 ounces of silver to a ton of ore, at that time had 200 pounds lead contents worth $5.30, and ten ounces of silver content worth $10 or more, making a total value of $15 or more to a ton of ore. At the present price of $3.15 for lead and thirty-one cents an ounce for silver, the same ore is worth between $9 and $10 a ton, or one-third less than pre-war value. The prices of tin, copper and zinc have declined similarly and are below pre-war prices.

Declines Are General

Similar conditions prevail with the producers of what you eat and what you wear. Cotton, wool, silk and hides and all of the food staples are selling at point of origin at far below pre-war prices. These astounding conditions are at once the cause and the effect of the world depression. The ability of the producers to consume other products is limited to what they can exchange their own products for.

I do not presume that any man seriously believes our government responsible for this condition, that is world wide.

I presume that no one here believes that there is any quick road to a return of prosperity through legislation. It is an interesting fact in history that the great events that have been land-marks showing human progress, and are celebrated in holiday and song, have without exception commemorated acts which have repealed previous laws, rather than those that created new laws. The Fourth of July, the fall of the Bastille, the Emancipation Proclamation, the repeal of the corn laws in England—all celebrate revolutions in thought overthrowing old laws.

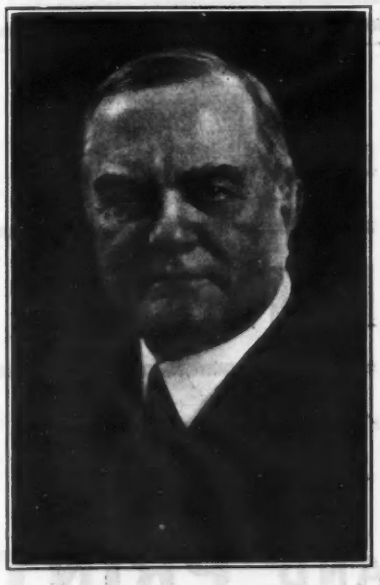
Ills, both political and commercial, have frequently in past history been cured by the repeal of previous laws, but never by the enactment of new; except to the extent that the new law was in complete harmony with those basic laws of trade which control all the acts of man and work for the welfare of humanity. It is also well to reflect that ours is not a government by men. It is not a government by parties. It is not even a government by law. Ours is a government by public opinion, and any law that is not sustained by public opinion will sooner or later be modified or repealed.

Public opinion, in turn, is a matter of growth. Ideas, at first perhaps unnoticed, work their way through a community and, if true, extend further and further, until they dominate public thought, find expression in political bodies and finally become the law of the land.

Effects of the War

In considering the depression, we are apt to overlook the great outstanding fact that we have passed through the greatest war ever known. Some allege that the gold standard is the cause of all the world ills, and that bimetallism, increased use of silver or a "managed currency" would remedy all present suffering. Others allege with equal confidence that the fear that the United States (following the example of Germany, France and England) may go off the gold standard is largely responsible for our ills.

Mr. Hoover evidently feared for the protective tariff, and apparently attributed to it the greater part of the growth of the United States since the days of Hamilton. Equally fervid orators con-



Edward J. Cornish

tend that the Smoot-Hawley bill has been the most potent cause of the depression.

Is it not strange that in the midst of this discussion so few have attempted to draw from the evils engendered by (and logically following) the war, the lesson that war should not be I recall that the day war was declared, and long before the United States became a party to it, every stock exchange in the United States closed and every bank took steps to protect itself from the cataclysm that they foresaw. All the business world was gasping and prostrate.

To my mind, the business depression, world wide, is the last tragic catastrophe of that great war. It is accompanied by loss of property, of hopes and even of life, that can only be compared to the devastation of the war itself.

The first effect of the war was an urgent demand for war supplies, made manifest in the market by prices of $3.50 a bushel for wheat, thirty-five cents a pound for copper, fifteen cents a pound for lead, and munitions at any price that would secure prompt delivery, until stabilized by the cost plus contracts of our own government. Wages were doubled and doubled again in our industrial centers, accompanied by doubling and doubling of the cost of living.

An even greater change took place on farms and in mines. Wheat, corn, potatoes, cattle, hogs and everything you eat were increased to several times their pre-war prices. Many a farmer made more money from his farm in one year than the farm itself cost. The price of farm lands increased rapidly. With each sale of land, a new and larger mortgage was placed.

With patriotic enthusiasm, lawns were ploughed up and planted with potatoes. The wornout farms of New England were put in good condition, fertilized and made productive. Irrigation ditches were multiplied and easily financed. What was true in the United States was true in all other countries outside the war area.

At the close of the war the millions that were in the trenches themselves became producers, with the result that everything you eat and everything you wear is being produced today far in excess of the greatest possible consumption, with consequent decrease in market value.

Supply and Demand

The law of supply and demand has resulted in a continuous lowering of prices. The farmer of the Missouri valley states can burn his corn as fuel today more advantageously than he can sell it and buy coal, thereby lessening the shipments of corn to the market and coal to the farm. The railroads and all the industrial companies have lost their most important customers. Unemployment has become a menace to civilization. Poverty everywhere is appealing to man's charitable instincts. The attempt to remedy conditions by public employment or public dole affords only temporary and partial relief. Increasing taxes aggravate the evil. The farmer and the miner cannot pay interest and taxes out of the meagre returns of what his labor has produced.

All of the conditions of industry have been unbalanced. The great problem of our time is to get them readjusted to a proper balance. That, in my opinion, is taking place today more rapidly than any statistics show. Mines are being closed, but in a little while consumption, encouraged by low prices, will enable the more profitable mines to increase their output and give employment to more and more men, who in turn will become better consumers of other products.

In like manner the farmers are readjusting their crops to conform to market demands. Many of them are losing and will continue to lose their lands because they cannot pay interest and taxes; but as tenant farmers they will rent their lands for less than they are today trying to pay in taxes and interest, and will rapidly become more and more prosperous and better and better consumers of the goods made in our industrial centers. Prices in industrial centers must be reduced so that the product of the labor of one part of our population can be exchanged fairly for the product of the labor of the other portions of our population.

This is taking place very rapidly today among the smaller companies, who can more speedily readjust themselves to existing conditions. The larger companies, facing declining sales, are striving to decrease their prices insofar as their costs will permit. Salaries have been greatly reduced and are being still further reduced. Decreasing rents and reduced cost of living are rapidly making possible a reduction of prices.

In a little while, in my opinion, there will be a perfect and just balance. The present depression and all its cruel accompaniments will become a matter of history, like similar conditions that followed the Napoleonic Wars and all other great wars in history. There will be a universal demand for reduction of taxes.

At no time in the history of our country has there been manifest more strength, more courage, more intelligence, more character than in the way the problems of the present depression are being met and solved. Like a cyclone it came. Like a cyclone it is passing away. The destruction in its wake will soon be cleared. Thrift and industry, which are now a necessity, will again become a virtue. Excessive borrowing and spending are no longer considered a panacea.

The morale of our people has been greatly improved. In this country, at least, there is no demand for injustice or confiscation. The promises of all parties to do what they can to reduce taxation, ameliorate conditions and prevent hardship; the assurance that nothing will be done by government that runs contrary to those laws of trade which reward labor adequately, demand equal opportunity, secure justice and encourage higher morality, has given to all of our people hope and courage, and is causing the problems of the day to be met with faith and confidence.

President Maston: I am sure we are all deeply impressed by the marvelous way in which we have had explained to us the conditions that have been brought about by the World War, which I have heard Mr. Cornish express so many times. Now, gentlemen, I would like very much for this body to express its appreciation to Mr. Cornish for coming to us and talking about present day business conditions, by standing up.

(The audience arose and applauded.)

President Maston: We will now have a very interesting report from the constitution and by-laws committee, Frank Cheesman.

Constitution and By-Laws

Frank Cheesman:—This is interesting because it is going to be short for the first time in the history of the constitution and by-laws committee. It was longer yesterday, but we had a session last night which cut it down in the interest of economy and I was very glad to learn that at the forty-fifth convention at least our seams were tight if nothing else. I have attended forty-one of our forty-five conventions and that could not truthfully be said about a number of them.

The report of the committee on constitution and by-laws, to the president and members of the National Paint, Oil and Varnish Association, Inc., is as follows:—

We are suggesting in the interest of economy a change in Article II of the by-laws which refers to club dues.

Article II, Section 1, as it now reads, on page 173, states that on November 1st each club shall, through its secretary,

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furnish to the general manager a complete list of its members and such club shall pay as annual dues the sum of $20 for each eligible member so reported and $1.70 per month for each new member elected after October 1, as provided in the second paragraph of this section."

It is proposed to change this to a new section 1, to read, "Section 1. Club Dues:—On October 1st each club in the United States shall, through its secretary, furnish to the general manager, a complete list of their members and such club shall pay as annual dues the sum of $20.00 for each eligible member so reported, and $1.70 per month for each new member elected after October 1st as provided in the second paragraph of this section. Clubs located outside of the United States shall pay as annual dues the sum of $10.00 per member in United States funds or its equivalent."

I move, Mr. President, the adoption of this new section 1 of Article II of the by-laws.

(The question was seconded, put to a vote and carried).

Mr. Chessman:—There is no change suggested in the second paragraph of Section 1 and no change in the third paragraph except as follows:—

"Section 3. Individual Dues:—Each United States member in good standing on October 1st shall pay as annual dues the sum of $20.00 and for membership outside of the United States shall pay as annual dues the sum of $10.00 in United States funds or its equivalent."

I move the adoption, Mr. President, of the New Section 3, Article II of the by-laws.

(The motion was seconded and carried).

Mr. Chessman:—Those are all of the changes suggested in the present constitution and by-laws by the committee.

Discussion

H. L. Wilkinson: I was under the impression that there had been a resolution submitted to change the constitution in the matter of associate memberships.

Mr. Cheesman: I mentioned that there was a session last night that struck out about two-thirds of my report and that was one of the things they struck out. We haven't had a chance to warn those members who attended the previous session that that was done, and it was considered wise not to do it. It was already written to be submitted.

D. W. Figgis: There is one point on which I realize I am out of order, but I would like to ask the question whether that phrase "in United States funds" was considered seriously because it seems to me that the amount of money involved is very small, the difference on the exchange, and if that has not heretofore existed in our provision for Canadian dues payments, it seems to me it might be somewhat of an affront to our Canadian members. I just raise the question to be sure that it has been covered.

General Manager Horgan: I could answer that if you want me to, Mr. Cheesman.

Mr. Cheesman: Yes, please.

General Manager Horgan: That was very seriously considered. We only have one constituent club in Canada and last year it cost us $80 to collect the dues and they apologized in transmitting the amount. The Canadian members are familiar with that situation and it has all been considered. I have had some correspondence on that point with Mr. Monypenny of Canada, so I am sure that they understand it.

President Maston: The next order of business is resolutions.

Resolutions

General Manager Horgan: The next order as stated on the program is recommendations and resolutions from other committees.

None of the committees reporting to the National Paint, Oil and Varnish Association offered any resolutions that have to be acted upon, and reports of an informative character were accepted as such by the board. The resolutions that I am going to present now—and there are just two or three of them—are the following:—

The first was from the Buffalo Club, suggesting, in fact urging, a reduction in dues to the national association by constituent club members from $20 to $15 a year. A copy of the Buffalo resolution was sent to all other clubs in the association and of the thirty-seven clubs in the association there were five that endorsed the resolution of the Buffalo club.

I have a feeling that perhaps—I don't know, it is just my opinion—the Buffalo club in offering that resolution was not familiar with the financial situation of the national association. The reports of various officers this week have indicated, I hope quite clearly, the necessity for revision in our budget last year, curtailment of staff and salary reductions, so that to further reduce the income of the association by $5 per member would seriously handicap the association in carrying on its service and functions to members.

Various clubs passed resolutions disapproving of this suggestion, and one from the Philadelphia club, in the opinion of our Executive Committee, so well expressed the situation that copies of it were sent to all the clubs

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in the association. I will read it; it is brief:—

The national income and budget have been very carefully considered. It has been clearly shown that for the coming fiscal year, beginning October 1, drastic reductions have been necessary by reduction in income, and that to reduce these necessary expenses further would imperil the eciency of the entire organization. It is, therefore, the unanimous opinion of the members that any further reduction in local club dues to the national association is inadvisable and impractical.

The point was brought forth that the proposed saving to an individual member would amount to less than 50 cents a month, and that in view of this fact, and also in view of the absolute and obvious necessity of maintaining the present budget, any such reduction at the present time would be highly inadvisable.

The action of your executive committee and board of directors concurred in the reasons set forth in the Philadelphia resolution and my instructions were to acquaint the Buffalo club with the action of the board and to present it to the convention, of course, for their action.

President Maston:—Gentlemen, you have heard the presentation of the resolution by the Buffalo club and the splendid way in which it has been answered by the Philadelphia club. What is your pleasure?

Mr. Cheesman:—I move that the recommendation of the board be concurred in by the association.

(The motion was seconded, put to a vote and was carried.)

Toronto Resolution

General Manager Horgan:—The next resolution is one from the Toronto club recommending a decrease in dues for the Canadian members. This has already been covered by Mr. Cheeseman's report, and the action of the board of directors was to concur in the recommendation of the Toronto club. I do not think any further action is necessary inasmuch as the convention has approved Mr. Cheeseman's report.

Two from Chicago

We have two resolutions from the Chicago Club. The first is this:—

As the plans for the Century of Progress are now rapidly taking definite form and it is an assured fact tnat the event will be a complete success, and furthermore, as it is estimated that there will be an attendance of 50,000,000 from all parts of the world, it is the opinion of the officers and members of the Chicago Paint, Oil and Varnish Club that an exhibit at this world's fair would have a stimulating effect on value, need and use of paint products generally to the benefit of our industry as a whole. It is therefore

Resolved, That the National Paint, Oil and Varnish Association provide a suitable exhibit of the paint, oil, lacquer, varnish and allied industries at the Century of Progress Exposition, Chicago, 1933, at an expense not to exceed $25,000. Such funds to be procured by individual subscription throughout the industries involved.

This resolution was considered by the executive committee and the board of directors and as it was felt by those boards that this matter was one of primary interest to manufacturers it was thought that it should properly be referred to the educational bureau.

The educational bureau considered it at their meeting on Monday evening, and their action was that the matter be referred back to the Chicago members to procure further details and report back to the educational bureau at its next meeting. They recognize that the time is short, but as the bureau will be meeting within the next few weeks, they feel that they would have to have a little more detailed information as to just how this expense was to be distributed. The further fact was brought out, by some of the manufacturers present, that some individual concerns had already made plans to make exhibits of their own and in their opinion it was rather doubtful whether the associations could go out at this time and assume the responsibility of securing subscriptions in the amounts stated. So, the action now is to refer this back to the Chicago club for further detailed information.

Mr. Robinette: I move that we concur in the action of the board.

(The motion was seconded and carried.)

Invitation from Chicago

General Manager Horgan: The second resolution from the Chicago club is one inviting the association to convene in that city next year:—

October, 1933, will represent a span of ten years since the National Paint, Oil and Varnish Association gathered in convention in the city of Chicago.

Many important events have occurred in that decade, both in our industry and the development of Chicago. The officers and members of the Chicago Paint, Oil and Varnish Club, after careful consideration and due deliberation, have concluded that it would be a fitting climax to ten years of acnievement to again hold the convention in our city, particularly as October, 1933, will see the Century of Progress, or world's fair, at its height and many of our members would be glad to have the opportunity of coming to Chicago for this double attraction—our national convention and our great World's Fair. It is therefore

Resolved, That the officers and members of the Chicago Paint, Oil and Varnish Club at meeting assembled on October 6, 1932, do hereby extend to the National Paint, Oil and Varnish Association a most cordial invitation to hold their annual convention in Chicago, preferably during the early part of October, 1933.

The action of the board and executive committee was one of concurring in this to the extent that this was a matter that could properly be referred to the committee soon to be apponted on time and place of the 1933 convention.

President Maston: You have heard the resolution of the Chicago club and their very generous invitation to hold the convention in Chicago next year, and the recommendations of the board of directors. What is your pleasure?

Mr. Robinette: I move we concur in the action of the board.

(The motion was seconded and carried.)

In Memoriam

General Manager Horgan: The last resolution I am going to ask Mr. Cornish to present as he was appointed chairman of a special committee on resolutions from the board of directors to present this resolution.

Mr. Cornish: This resolution has been prepared by others and was handed to me this morning, but I think it expresses what we desire to express.

Whereas, During the past year the shadow of death has taken a heavy toll in the ranks of the National Paint, Oil and Varnish Association; members whose foresight have played a definite part in the upbuilding of the paint, varnish and allied industry; and

Whereas, In the passing of our beloved Arthur S. Somers, H. S. Chatfield and George E. Watson, the National Paint, Oil and Varnish Association has lost three of its most distinguished leaders, all former presidents of the association, and

Whereas, The members of the National Paint, Oil and Varnish Association desire to express their sorrow at the taking away of these outstanding executives whose indefatigable efforts and high sense of duty have contributed in such a large measure to the progress of the industry and the development of fellowship and ethics amongst the membership; therefore be it

Resolved: That the National Paint, Oil and Varnish Association assembled in annual convention in Washington, D. C., November 16, 1932, deeply deplores and mourns the passing of these men whose vision and guidance will ever remain an inspiration to us all, and be it further

Resolved: That a copy of these resolutions be spread upon the records of this convention and also sent to members of their families as a slight expression of esteem and understanding sympathy.

This is a simple resolution, making note of a very sad fact, gentlemen.

We always feel as though we are engaged in something that is totally inadequate when we prepare a resolution of this kind. Anyone who knew Mr. Watson of Chicago, his geniality, his sympathy, his co-operation with everything that was befriending the industry, and his friendly relationship with all who knew him, feel that you could not give adequate expression to your loss.

When we come to Mr. Somers, one of the first men I met when I became connected with this association, we have always looked upon him as one of the most capable men, who represented us faithfully and well, who was able to supply every want we had in our organization for good ideas and good expression of them, who was a warm personal friend to every one whom he knew.

Then we come to Chatfield. Mr. Chairman, there is not a man who knew Chatfield who can speak of him without tears. Lovable, friendly, willing to put himself out at any time to do a favor for a friend, capable, efficient, active, we have a personal loss in him that all of us feel.

I, therefore, move this inadequate resolution, but accompanied with feelings of esteem and friendliness for these men that cannot find expression in words.

President Maston: You heard the resolution, gentlemen.

Colonel Callahan:—I move its adoption by a rising vote.

(The audience arose, and the resolution was declared adopted.)

General Manager Horgan:—Mr. Chairman, I would like to say to the members that I received last evening a letter from Mrs. Chatfield in which she stated it was impossible for her to bring herself together just now to personally acknowledge all the expressions of sympathy she had received, but she asked me to convey to the convention her appreciation, also for the tributes of flowers that were sent by our associations. She said in due course all of you who had been thoughtful of her in her trouble would hear from her directly.

(The formal report of the committee on memorials, prepared by William Stuart Auchincloss, R. F. Adams, George Priest, jr., and George B. Heckel, was as follows):—

Memorial Report

William Stuart Auchincloss, Chairman

Again the drums beat in eerie cadence and ours is the sad duty to hail to the roster of our departed contemporaries. The shadows of death gathered with a heavy toll in the ranks of the National Paint, Oil and Varnish Association. In number, only thirty-six, but in spirit, immeasurable is our loss. Such noblemen as Arthur S. Somers, George E. Watson and our beloved H. S. Chatfield cannot be replaced. And now, only a memory remains—a memory of silence. Yet, the silence seems audible. It lives and breathes. It is part of us. Now, does it not rise in spiritual crescendo to inspire us, to urge us forward and guide us along the path of progress which they the pioneers have builded. Yea, it is a heritage of treasure, rich in the ideals that lighten the labors of our common cause.

(The report contained obituary notices on the following members.)

Bray, Joseph Wells
Chatfield, Henry Summers
Chittenden, Merton R.
Clause, William Lewis
Cobb, A. Polhemus
Colby, Frederick L.
Dolye, Frank C.
Eisenmenger, Ernest A.
Friar, John H.
Fuller, Ralph L.
Gamble, Stewart
Graf, Alexander D.
Helfrich, Alfred R.
Hurtz, Frederick J.
Jahn, John Henry
LaVallee, Cleophas J.
Long, Charles R., Jr.
Macneal, Charles L.
McClintock, Frank F.
Meyer, William C.
Oehmig, Paul, Jr.
Perry, Robert Swain
Pietzsch, Herbert
Ramsay, Walter Bannerman
Robertson, William J.
Schroeder, Ferdinand W.
Schumann, John Henry
Scott, William H.
Seabrook, Charles Patten
Sellers, Edwin Foote
Somers, Arthur S.
Stoer, W. Frederick
Swift, John B.
Utley, W. B.
Watson, George E.

(The meeting was adjourned at twelve twenty-five o'clock.)

Second Business Session Wednesday Afternoon

(The meeting was convened at two-thirty o'clock, President Maston presiding.)

President Maston: The first number on the program is the club programs.

A number of years ago, it was suggested, the fact is it was offered as a plan for association activities here in this hotel, that we might contribute a great deal to the interest of club work if we would provide clubs with programs. I believe in the original resolution a number of five programs was set up. Very shortly after that was agreed to, the work was taken over by Mr. Caspar, and I believe that he has been the chairman after the first year. But, aside from that fact, I want to express my appreciation to Mr. Caspar and to the committee for the great assistance of these club programs during my administration.

The programs were five in number. They were scheduled and issued promptly as scheduled. I am confident that they were of great assistance in holding and creating new interest in club work. I marvel at Mr. Caspar's energy and his ability in getting these programs together. I assure you that if he ever gets on your track and asks you to help him with a number, that you might as well give in at the first request, because he is going to stay right with you. We owe him a great debt of thanks, and I would like to express that now as I introduce him—or present him. He needs no introduction. Charles J. Caspar, of Pittsburgh.

Club Programs

Charles J. Caspar:—Mr. President: Thank you. To the members of the National Paint, Oil and Varnish Association: The 1929 convention of our association, in accordance with the president's recommendation and an inspiring address by Granville M. Breinig, unanimously adopted resolutions creating a national program committee, whose duty it was to prepare five programs each year for submission to the constituent clubs of the association for their consideration.

The resolution sets forth that the subjects of these programs are to deal with the activities of the association and the industry.

This committee has, up to date, prepared and distributed, following the adoption of the committee's 1930-31 No. 1 Program, which provided for uniform club constitution and by-laws, ten club programs as follows:—

1930-31 Series

1. The N. P. O. & V. A.
2. The 1930 convention.
3. Unfair competition, the non-exchange agreement and our code of ethics.
4. Trade promotion, clean-up and paint-up and save the surface.
5. The local club.

1931-32 Series

1. Traffic committee.
2. The 1931 annual convention.
3. The uniform financial plan.
4. The simplification plan.
5. The local club.

The culmination of our work in this series rests in our 1931-1932 No. 5 program, which we look upon as the most complete and comprehensive manual of our association and clubs that has ever been prepared.

We regret that funds will not permit the publication and distribution of this program throughout the entire membership.

There is a very serious obligation resting upon every club president and club program committee chairman, in giving careful consideration and study to this program and the proper presentation of the same to the clubs.

President Maston and the committee have put into this program their best thoughts, based upon their knowledge and experience in club and association devotion and labor.

In October, 1932, your national program committee caused to be sent a questionnaire to all club presidents and club program chairmen.

(The questionnaire read by Mr. Caspar listed the programs and asked the following questions:—Do the clubs use the programs? If not all, why? If none, why? And criticisms and suggestions were invited.)

We consider the answers most gratifying to say the least, so much so that we unhesitatingly report the plan as successful and recommend its continuance.

It has often been emphasized and forcibly brought to the attention of our conventions that the life-blood of our association can only come from and through the clubs.

No one has ever questioned the statement that the potential strength and power of the association can only come from and through the clubs. Our clubs must be encouraged, by and through our programs, to become more of an integral working part of our national association, created for the sole purpose of serving the industry.

Purpose of the Programs

It has been the purpose of our programs to bring to the unknowing club member a better understanding of what the national association stands for, what it has done, what it is now doing and what it plans to do for the industry, that every member who may be a part of our industry may learn, through our programs, what machinery we have and what that machinery is now producing and can be made to produce for him and his industry.

This we have, in our modest way, hoped to bring to every club for such use as the club presidents and club program committee chairmen may elect. In the annual reports of this committee we have stated that our programs are not specifically intended for the knowing members, and I refer to those members who attend our annual meetings and either have or may now be serving the association in various important assignments, and, by their presence here today and at every annual meeting, their service as officers, committee chairmen, and so forth, by their very acts, presence and contribution of time and effort, demonstrate not only their interest, co-operation and knowledge, but endorse and support our many valuable and successful instrumentalities created to serve the industry.

These members we urge, by their presence at all their club meetings, to exercise their influence, knowledge and leadership at club meetings, that the clubs will seriously consider our programs and function along constructive and co-operative lines.

The appeal I now make is direct to members within the hearing of my voice, attending this convention.

You can render no greater service to the association, your club and the industry that means so much to you, than by attending regularly your local club meetings, that your club may be bigger, better and stronger as the result of not only your attendance but that you may help direct the club in constructive and corrective activities.

You are, no doubt, one of, if not the leading concern in the Paint and Varnish business in your home town. By your very absence and non-interest, you unconsciously or consciously place your stamp of disapproval upon your club's activities; per contra, by your presence and by your manifested interest in the activities and welfare of your club, you lend a serious and far-reaching influence that will cause many of our dormant, inactive, 'have-a-good-time' clubs to render real service to their memberships, the industry and the national association.

We all realize that our clubs have, by getting together, as it were, created a better feeling among competitors than was the rule and condition before our clubs were created.

Discussion of Problems

No one can deny the advantage of an occasional "good time" club meeting, but there are important problems facing the industry in every city and state where we have clubs. These problems should be intelligently and constructively discussed for the correction of evils, feelings of distrust, legislative abuses, the removal of customs contrary to sound business principles and ethics, as our Preamble so well prescribes.

We recommend the perpetuation of our code of ethics by annual or semi-annual club readings of this splendid document, "Lest we forget."

If the national program committee is rendering real and valuable service to the clubs, the industry and the association (and we firmly believe it is) you owe it to those who labor for the betterment of the association and our clubs to support the committee by your interest and support in your local club.

In closing my third year as chairman of this committee, let me say, it is my fond hope that we may have, to some degree and in some small way, caused our leaders as well as our clubs to come to a fuller realization of the real tangible value of our clubs and that we may have

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kindled a spark that will grow into a flame of enthusiasm and co-operation in behalf of the clubs, where the real forces of our industry and association rest, to be mobilized for action at any time.

If we have done this, we shall feel generously and, therefore, adequately rewarded and repaid for the effort put into this work.

It is our profound hope that the seed this committee may have planted will germinate and flourish, that our clubs will all become active, successful, associated "branch warehouses" of energy, service and accomplishment to themselves, the N. P. D. & V. A. and the industry.

We acknowledge the valuable help given this committee in the preparation of some of our programs, and here register thanks to Dr. Plumb, Messrs. Felton, Leveille, Bownes, Roh, Melum, McFadden and President Maston for their generous support and contributions.

President Maston:—What was the action of the board on this very outstanding report?

General Manager Horgan:—The board procedure on all reports is to take formal action on recommendations or resolutions. The other reports are referred to the convention as a matter of information. It goes without saying that they are all 100 percent in appreciation and accord with the work of Mr. Caspar's committee.

President Maston:—What is the pleasure of the convention on this report?

(It was regularly moved and seconded that the report be accepted with thanks; the motion was put to vote and carried.)

Suggestions Wanted

Mr. Caspar:—The committee would like to have some suggestions, Mr. Chairman, if any member has anything to say or any criticisms to make. The criticisms were very mild. One that seemed to be general in our questionnaire was the length of our program, and our reply to that has always been that these programs are not prepared with the intent that they should be submitted to the clubs verbatim. They are prepared with the thought of placing them in the hands of both the president and the chairman of the program committee, to take out of that program such portions as they believe can be used to good advantage in their clubs.

General Manager Horgan:—A suggestion that came in at the eleventh hour, and Mr. Casper didn't have a chance even to review it, was from one of our very strong constituent clubs, and it was this, that perhaps the programs would be more effective if it could be arranged to have all of the clubs in the national chain hold their meetings on approximately the same date, so that there would be more force back of these programs if they were released simultaneously throughout the industry. This idea had not been overlooked by the program committee, but the situation is this, it is only the larger clubs really that operate under regular constitutions and by-laws—New York, Chicago, New England, Pittsburgh, and various other large groups have their printed by-laws wherein they set forth specific meeting dates. I have been unable to attend different meetings of the clubs mentioned because they are on the same dates, but it is rather difficult where there is just a small group of five or six—and many of the clubs are very small—for them to treat these programs exactly as a larger club would.

I am referring this letter and suggestion to Mr. Caspar's committee, or the succeeding committee, whoever it will be composed of, for their consideration. I think and we believe that the suggestion, if it could be put into effect, would be very helpful in spreading these programs.

I would like to say, in connection with this last program, No. 5, just to emphasize what Mr. Caspar has said, that those of us who have read it and have had any part in its preparation, that it is the best exposition of association work that has ever been put together in one document, and for that reason, and it is long, we are suggesting to the clubs that they dispense with any other features of their meeting the evening that this program is presented, except such orders of business as are required by the by-laws, and take time out to discuss this particular program because I think if they do that they are going to get the answer in a lot of clubs as to why their meetings are not better attended, why they do not get the principals out. I think it is just a lack of understanding on the part of a good many that they do not know what all the shooting is about.

George B. Heckel:—Our club, the Philadelphia club, has religiously presented these programs and they have proved, I think, very informative and very useful to the members, but one suggestion occurs to me. I do not know whether it has been touched on in the letters of transmission, but it was urged upon the clubs that some individual be selected not to read the program, which is a reference book, but to prepare a live statement of the program as related to the club itself, and that would give a focus for a start for an argument, or a discussion. I do not know whether that has been done or not.

Clean-Up and Paint-Up

President Maston:—Thanks, Mr. Heckel. Mr. Caspar is eager to have your suggestions, and I think we ought to pause a moment to see what further comments, recommendations or suggestions there may be. This is such an important subject that it is certainly worthy of the time.

Changing the order of the program just a little bit, the next number will be the "Potentialities of the Clean Up and Paint Up Campaign." I am sure that the talk that we are about to hear is likely to be one of the high spots of the convention itself. I can't find words strong enough to express to this committee, and particularly the chairman of the committee and those at headquarters who have carried on this work with reduced budgets, steadily falling budgets, how greatly those who have the administration this year of the association have felt the pull and the vitality of this campaign. It is rather difficult to find just the reasons why this custom built—I used those words this morning—campaign does not take firmer hold in this industry. I doubt if there is an industry in the country that has a more comprehensive trade promotional activity available, machinery set up and geared in motion, than the paint and varnish have in "clean up and paint up," and I would like to express to the chairman of that committee the deep appreciation of the officers who are passing out, how greatly they have helped us.

The chairman has taken time from his work to travel around the country and present to the several clubs a story—he won't be able to give you the full story here today—that I believe is a trade builder, and I am sure that we are going to find it, as I said in the beginning, a high light of this convention. Dr. Plumb, I don't want to introduce you, I just want to present you to the boys and to again express for the convention our appreciation for your work. Dr. Plumb of Detroit, central zone vice-president:—

Address by Dr. Plumb

Dr. Plumb:—I might wish that I was just partially worthy of that introduction. I become very enthused in clean up, because I like it; I believe in its possibilities and I believe in its great value.

Gentlemen, these are soul-searching times, days of deep analysis. To our serious thinking, platitudes and generalities are quite distasteful. Our interest largely concerns basic economic facts considered in clear, frank discussion.

We are a rich industry, with an annual volume of manufactured products totaling well up into the hundreds of millions. We are an industry with a very creditable past, occupying an enviable position in the commerce of the nation and of the world.

Dr. R. A. Plumb

Has our growth been in proportion to the contributions which we have made to deserve it, or have we been fortunate in benefiting by opportunities that have to a large measure been created for us?

Are we like the poor little rich girl surrounded by luxury but deficient in all the human values that make life truly rich? In short, what are we doing to justify our existence in this modern, critical, hard-boiled world of ours? And still more important, what are we doing to insure our continued existence in these fast-changing times?

John Jones had a fine prosperous business. His business was booming, the world looked like a million dollars to him. And then in a few months his orders fell off and he began to talk about hard times. He thought business would ultimately come back. He failed to appreciate that possibly his business might be destined to doom. His goods were old, his ideas were old, his overhead was high, his methods were out of date, his customers left him. The inevitable answer—bankruptcy, and the sheriff nailing a "for sale" sign on his store. Too bad for old Bill, you say; he was a nice fellow, but he was a rotten interpreter of business trends.

Changes Create Change

Someone conceived the idea of a closed body for automobiles, and a dozen established industries were affected overnight. Men switched to low shoes and then demanded silk socks. As a result, the manufacturers of high shoes and cotton socks were out of business nearly overnight.

Book stores used to prosper, but how can a fellow read books and keep up his golf?

The woodshed finally disappeared in favor of the coal bin, and now coal is fighting its battle to keep oil out of the domestic furnace.

The development of rayon has had a very direct effect upon cotton textiles. It has concerned both markets and methods of manufacture. Rayon developments also stimulated production of a wood fiber of a higher purification available to paper makers as a substitute for cotton rags.

It is interesting to think just what has happened to the village blacksmiths, the cobblers, the harness shops, and the ditch diggers. The change in human psychology that has eliminated stovepipes, kerosene lamps, high shoes, stiff collars, night shirts, etc.——!

To think hypothetically for a moment, let's just suppose that some powerful and malicious demon decided to do away with the paint industry by removing the human motives that have called it into being and that thus far have sustained it.

Suppose through this demoniac influence on the public psychology people began to feel that the exteriors of buildings are more beautiful unpainted than painted. Preposterous, you say. Do we not already feel that log cabins are more beautiful in their natural state? Suppose the general mass mind develops the same feeling about interior woodwork and about furniture. Again not so preposterous, as any lover of antiques will tell you.

But, you argue, what about the wastefulness of all this? Would not our buildings rot away through exposure to the elements? But suppose our malicious demon instilled in the human race a preference for building material that requires no paint to make it permanent, such as brick, stone, cement block and stucco, and certain kinds of wood, such as cypress, white pine and metals, like copper, chromium or cadmium?

But, enough of this horrid picture. You readily understand what I mean.

The entire paint industry has as its very foundation certain human beliefs as to economy and efficiency and certain human feelings of aesthetic conventions as to beauty. These human factors you will surely realize are truly basic for us, and certainly the industry could not exist without them.

Before I leave this point, I might show by positive though still hypothetical example how the mental attitude of the public entirely determined our prosperity.

Suppose people developed the feeling that their homes, apartments, hotel rooms, etc., ought to be changed in color with the changing seasons, just as nature changes the colors of our outdoor world from spring to summer, from summer to autumn, and from autumn to winter. You say, "what a marvelous opportunity this might prove for the paint industry," but of course, the idea today appears chimerical. Only thirty years ago so did automobiles, paved highways, and airplanes, and mechanical refrigerators, and numerous other common conveniences.

Nor am I now claiming that the idea is not chimerical. I am merely illustrating again the dependence of our prosperity on public psychology.

What Will Industry Do?

I return again to my question:—What is our industry doing in the way of constructive work to maintain and enlarge our field of usefulness and to insure our security?

Without discounting for one moment the outstanding contributions of our educational bureau, the merchandising vision that created and operates our save the surface campaign, or the modest support we have given to clean up and paint up, the aggregate of all our promotional activities is so meagre compared to the width and breadth and height of our opportunities. I am afraid we must accept the indictment that our industry has been somewhat parasitic in its growth.

But you come back at me with the retort, "It is always easy enough to find fault, but constructive thinking is not so simple. What can and should the industry do?"

I believe I am prepared to accept that challenge. This is certainly not the time nor the place to discuss the logical phase I have referred to, the promotion of paint on the ground of economy. The answer to that, as you readily perceive, consists in the "save the surface campaign," and in the individual advertising and selling efforts of individual manufacturers, all of which shou'd be highly regarded and commended.

The other problem is the more difficult one of how we can enhance the aesthetic appreciation of people so that they will want more attractive homes, more attractive apartments, offices, etc.

I will readily admit there is no direct method applicable to this problem. You can directly present to a man the arguments for the economy of a painted surface over one unpainted and how to use our products to achieve beauty, and you can convince him logically, and thus influence him to buy your product, but you cannot argue a man into *accepting* the aesthetic value of anything. The 2000-year-old proverb, *"De gustibus non est disputandum"*—interpreted, "There is no disputing about tastes"—demonstrates this statement. No, we have to seek an indirect method of arousing the public to the *need* of paint for aesthetic effect. There is no question but that the need exists.

Most fortunately, we have available a method for exactly this purpose, a method we know, one that has proved effective, a method which is economical in its operation, a method which lacks for complete success only one thing, and that is the clear understanding and more whole-hearted co-operation of our industry.

Can you conceive of any activity that would be more effective in influencing mental attitudes and developing a consciousness for the value and charm of the aesthetic than is embraced in our great clean up and paint up campaign, a campaign that is accepted and promoted by so many civic agencies, a program that is made a major activity by boards of commerce, by women's organizations, by civic organizations, and particularly endorsed and placed in the curriculum of our school systems? There is no propaganda that can reach out so far to influence the habits and attitudes and the ideals of the general mass mind as exist in our great clean up and paint up campaign.

Bear in mind, we don't generally act on the basis of reason, but on the basis of emotion. We require an emotional stimulus strong enough to set our organisms in action. The clean up idea is the stimulus that sets up a new pattern of response, a new standard of pride. With the yard raked and the alley cleaned and the general environment placed in a tidy condition, then an unpainted house is conspicuously out of harmony and creates a jar. With this new standard or pattern created by the stimulus of the clean up idea, all elements which enter into the pattern must harmonize.

A Splendid Investment

I know of no direction in which this industry can more effectively invest its efforts and money to insure its future security and growth and to promote this quality of pride and this aesthetic consciousness than through the continual widening and broadening of our activities in clean up and paint up.

Since my association with this campaign, I have been puzzled to definitely identify the real major reason why our industry has not responded more aggressively and enthusiastically to its tremendous potentialities.

At times I have felt the industry considered the activity as so altruistic in nature that it would just naturally take care of its own growth and development. And again, I have felt as an industry, that we were deficient in our understanding of the simple sales psychology that clean up inevitably sells paint up. And again our vision of this activity was so narrow to our own local committees that we failed to recognize its capacity to influence a broader development of general mass thinking.

I have, however, reached the quite definite conclusion that the existing resistance to a greater program of clean up and paint up is due to the narrowness of vision that for the absence of a better name I am calling "product-minded."

You admit we are "product-minded." We are essentially interested in producing our products in greater and greater volume. Let's be frank about it. As an industry wouldn't we feel that we had arrived at a Utopia if we could sit in our factories and have the world come to our doors and eagerly take all the products we could produce? That is truly the manufacturer's idea of paradise.

But, friends, the time has truly come when we are compelled to change that product-minded attitude. We have got to come down to earth and enlarge our vision, and realize that our product, or any product, is only one of three very vital factors. Of the other two, the first, of course, is the consumer with his wants and needs and desires and prejudices, and we must study him now more than ever before.

Instead of being "product-minded" our attitude must now be in the direction of "consumer-minded" and "sales-minded."

The important question is:—What does the consumer want in the field of paint and varnishes and what ought he to want? What is lacking in his education in the field, and how can that lack be remedied? How can we help those who sell our goods to the public, whether they are our salesmen or dealers? And the more we delve this field, the more we realize the tremendous value of our clean up movement.

Again I challenge your suggestion of any direction in which we can concentrate our efforts that will be more effective in reaching the consumer consciousness than through the influence of clean up and paint up upon the habits and attitudes of our masses. Let me again remind you that the entire paint industry has as its very foundation certain human feelings and aesthetic convenience of cleanliness and beauty.

Clean Up Sells Paint

What is our immediate job? You will say, "To sell paint," and clean up does that exact thing. We have, however, a bigger job than that, and that is, to keep America sold on its self-respect, on its integrity of spirit.

How do I figure that out? Stop a moment and think. Close your eyes and imagine a street with houses on both sides, every house dilapidated, weather worn, unkempt, sadly in need of paint. What is your unconscious reaction? That the people living on that street are hard up, in bad shape, the neighborhood is going down.

Now picture in your mind another street, with houses on both sides, every house looking spruce and trim, the gardens taken care of, the buildings in good shape. And now what is your reaction? This is a street of competent home owners. They have to have pleasant surroundings to live in, and they make their surroundings pleasant. They could not live on the dilapidated street mentioned before. They have self-respect, the courage and energy of going about their daily business and making what progress they can.

Now just suppose we degenerated into a nation of unkempt houses. We are approaching that point. We are slowly becoming careless and dilatory about the appearance of things. It doesn't take long, by easy and gradual stages to become accustomed to sordid surroundings. The descent is not precipitous, it is slow and quite easy.

What effect on the morale of the whole country would it have if most of our homes, institutions and industrial buildings were gradually to appear as though nobody cared how they looked? Do appearances count? You know very well they do. Who gets the better audience with you in applying for a job, the man whose clothes stamp him as a down-and-outer, or the well-groomed gentleman?

For the sake of our self-respect, we must keep up appearances, even when there is no money in the savings account. Every one of your employees recognizes this reasoning.

That's why I say, our job today is bigger than ever before, bigger than a job of merely selling paint and varnish. It is a job of keeping up our national self-respect, and that's what makes this clean up and paint up campaign in 1933 more important than ever before. We have got to see to it that the United States does not look like it is going broke. We have got to see to it that people become paint conscious, more so than ever before. With less money passing from buyer to seller, with greater sales and advertising pressure being exerted by manufacturers in other industries for that diminishing sales dollar, our industry cannot afford to lay down. Even if it costs more, we must keep the idea of rehabilitation continually before the public.

And how do I suggest that we do it? By advertising? Yes, that is all right. But we have an even more effective instrument, and a less costly one to our industry, the clean up and paint up movement, a practical demonstration in the language the people can understand, and a perennial object lesson to maintain our national self-respect.

And all this for the decided benefit and advantage of our industry!

Program for the Spring

What can you do next spring? I will tell you. Be sure your own plant and your own home is cleaned up and painted up. Be sure this spirit of clean up and paint up becomes contagious with all your employees. What a tremendous influence our industry can exert in stimulating the interest of others by just cleaning up and painting up the properties that are owned by the thousands who are directly and indirectly connected with our industry.

And what more can you men do? Every man in this room enjoys the advantage of contacts with boards of commerce, with various civic organizations, with school systems, and is in position to contribute tremendously to the increasing interest and understanding of clean up and paint up, if you will just take the time and show the interest to carry the great message of clean up and paint up to those that you personally know.

Have you ever talked clean up and paint up with the secretary of your board of commerce? Have you ever sat down and discussed clean up as a very practical activity in the curriculum in the school system of your city?

The time has passed when you can justify leaving the promotion of our clean up and paint up to a national committee with its executive secretary.

The time has passed when you can justify leaving the importance of the development of this activity in your community to a committee of your local paint club.

It is your job, and I appeal to you at this time when you should be vitally concerned to determine the directions in which you can make the greatest contribution for the growth of your own business and of the industry in which you take such pride, by individually becoming a more active and enthusiastic apostle of the greatest campaign for the definite production of business that is available to any industry in the world.

President Maston: I am sure that there will be a number of questions that will be asked from the floor. Let's see if we cannot warm up a little bit for this very important work. I know we have Mr. Caspar here who is a former chairman of this committee. Mr. Caspar has told me that if it was possible for every member of the association to serve one year as chairman of that committee we would be clean up and paint up conscious. Charlie, would you like to develop that a little for us, your experience?

Pittsburgh's Experience

Mr. Caspar: I hardly know what to say in addition to the inspiring address made by the chairman of our clean up and paint up campaign committee. I might speak of our own campaign in the city of Pittsburgh, that has been sponsored by the Pittsburgh Chamber of Commerce for about nine years now. I am very glad to say that in its effort to balance the budget this year, clean up and paint up was the only item, the only campaign, the only activity in the Pittsburgh Chamber of Commerce that did not sustain a cut in its appropriation. Therefore, the directors of the Pittsburgh Chamber of Commerce have a great deal of faith, as well as a great deal of pride in our campaign.

You have all heard that Mary had a little lamb, but you didn't know that it followed her to Pittsburgh, and you ought to see the dirty thing now. Pittsburgh needed a clean up and paint up campaign. Pittsburgh has a clean up and paint up campaign and we are proud of it.

If there are any major cities that do not maintain and have a clean up and paint up campagn it is a tremendous mistake civically and altruistically first, commercially second, for this industry. I don't know that there is anything that I can add. As chairman of the clean up bureau, as President Maston has said, I was amazed when I first went into the office conducted by Mr. Emerson to find the tremendous interest in clean up and paint up outside of our industry. Serving as chairman of that committee, I was more appalled to find the little interest that was taken by our industry. I think that Dr. Plumb has perhaps done more to stimulate interest on the part of the industry in our clean up and paint up campaign than any of his predecessors.

President Maston: Thank you, very much, Mr. Caspar; that is fine.

We had, during this year, an outstanding event in the paint industry. I believe that the Boston Paint Night, which Dr. Plumb took the time to go and take part in, was something that will likely go down in history and will show the way to similar paint nights during the coming year.

The gentleman I am going to call on has not had any warning. Possibly that is the best way to spring this on him. Therefore, I am going to call on the eastern zone vice-president, Frank Bownes, of Boston, to come up here and tell us a little bit about Paint Night.

Boston Paint Night

Frank Bownes: I would feel it was negligence on my part if I did not take this opportunity to express our appreciation, the apreciation of the New England club, to Dr. Plumb for his trip which I encouraged, when he came to Boston. There is no question that the New England club has appreciated that in more ways than one, because I think we sort of entered into the wholesale distrbution of this clean up work in the way that we handled the situation, and that was, as you all know, by the getting together of a number of dealers from all parts of New England.

We had them come from about every state in the New England states. Each one was well represented, and to my surprise, we got together about 1,050 to 1,100 paint dealers, and Dr. Plumb delivered them an address that night on clean up and paint up that they will all remember as long as they live.

I do not know what the actual result was of that lecture, but I know that there are a great many campaigns started in the different states in New Engand.

There is no question that the clean up and paint up idea, the campaign, worked wonders for the distribution of our products, and it takes men like Dr. Plumb to stimulate that interest among a group such as we had there in Boston to put it over.

I know, in my own case, I have perhaps been a little bit lax, a little bit timid in getting to the front and putting the punch into matters of this kind, but I am getting my bearings more all the time. I hope to be able to follow through on some of these deals which would be a benefit to our industry.

I have just been promoted from the presidency of the New England club to that of chairman of the program committee. I want to touch on that a little bit because I have taken a keen interest in the local club program, particularly the last, No. 5, which tretated on the local club.

I made quite a study of it, and perhaps particularly because President Maston put in a lot of time on it, and it furnishes enough information for club program presentation on national affairs for each and every meeting that he will probably have this year.

The way I started off with it was to present, myself, at last Thursday's evening meeting a three-quarters of an hour talk on this program. I warned the other members of the program committee that it would be their turn next, that I did not believe that the chairman should do all the work. So, I forwarded the program to another member of that committee. I have aksd him to read it through thoroughly, get his slant on association work, and be prepared to present it at the next meeting.

I think that the program idea is the missing link, if there is one, between the work of the national association and that of the local club. I do not see how local members are going to know so much about what is going on in the national association activities unless they are informed, and the most splendid way I know of informing them is through this national program. I hope that the work will be continued.

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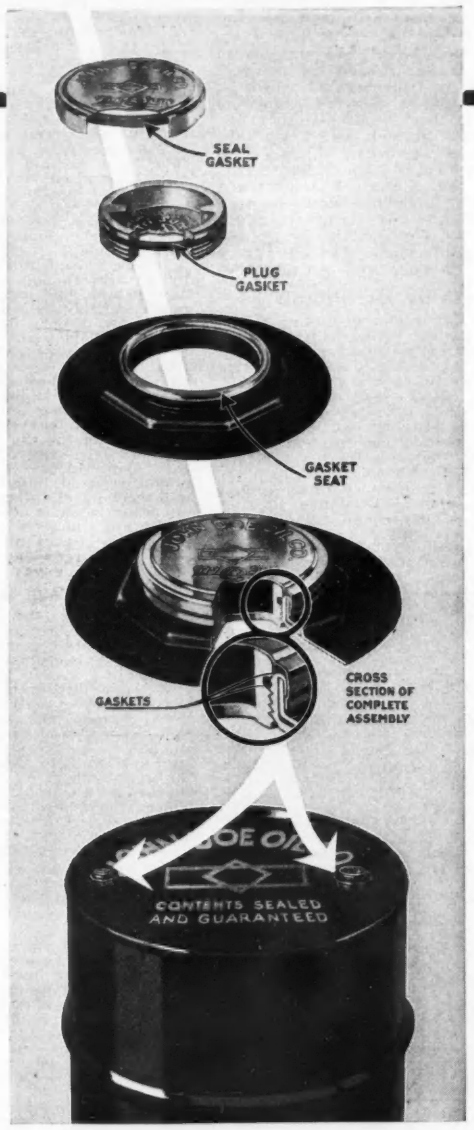

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I thank you for the opportunity of making this statement.

President Maston:—Thank you, very much, Mr. Bownes.

There is another city, in fact there are any number of cities that I might call on to tell us something about their campaigns, but it possibly would be a repetition. Chicago has had a marvelous campaign for years, and there are other cities that have. Milwaukee has had a campaign. I see the incoming president of the American Paint and Varnish Manufacturers' Association, Mr. Kurfees, from Louisville. I know you are interested in the campaign, Mr. Kurfees, would you tell us something about your experience?

Campaign in Louisville

Mr. Kurfees:—We have conducted clean up and paint up campaigns, Mr. Chairman, for a number of years with more or less succees; at least it has been sufficiently successful that none of our members would want to give it up, and we recently had a meeting, a little noonday luncheon meeting, on the question of pushing the paint business in our city. Some of our paint people were quite enthusiastic over seeing to it that we would have a better painted Louisville, and that would lead right into our clean up and paint up campaign in the spring.

We have been conducting a campaign for a number of years, as I said, in the beginning, with more or less success—I reckon less than more perhaps—at any rate we have gone so far as to sell the idea to the Louisville paint people. I do not think there is any doubt that we will keep it up. None of them, so far as I know, would like to drop it.

We have done no big things down there, for some say we are a little slow you know, in Louisville. After the cities all around us set us a pace then we come along, but our mayor and other people in the city take quite a hand in these things and help us out, and we will get there after a while if you will give us time.

I certainly appreciate the address of Dr. Plumb and we will all profit by that I am sure.

President Maston:—Mr. Kurfees, that is fine. It is local work, after all, clean up and paint up. It is a job you do in your home town that counts. Mr. Horgan, what was the action of the committee on this matter?

General Manager Horgan:—Knowing we were going to have this address from Dr. Plumb, the directors just naturally accepted the report with approval, and referred it to the convention for their action after they had heard more detail from Dr. Plumb.

President Maston:—What is the pleasure of the convention on this splendid address?

Mr. Caspar:—I move its adoption and a rising vote of thanks to Dr. Plumb for his wonderful work.

(The audience arose and applauded.)

(A detailed and illustrated report of the work of the clean up and paint up committee, of which Dr. Plumb is chairman, addressed to both national paint bodies as well as to the International Society of Master Painters and Decorators, was distributed to all members. A digest of this report follows):—

Clean Up and Paint Up Report

Specific, traceable profit aggregating millions of dollars to the paint, varnish, and allied industries by the creation of sales which otherwise would not have been made, and which have constituted an important support to our business barometer in the darkest year of the general business crisis, is the outstanding service of our national clean up and paint up campaign bureau for the past twelve months.

Careful perusal of the succeeding pages of this report will demonstrate clearly that our clean up and paint up campaign has potentials which make it far and away the quickest acting and the most readily evaluated agency for increasing the sale of goods which is controlled by any industry in the United States today. Your committee wishes it to be clearly understood that if anyone now conceives this campaign only in general terms of its benefits, he has only to definitely recognize and use the campaign and to "keep books" on what it sells in any given locality when the movement is properly organized and conducted, to realize its importance to his own business.

Represenative members of the industry have tabulated comparative results in sales, with and without the campaign, and have been amazed by the difference. These progressive leaders have shown the way, and only initiative and purposeful cooperation with our national clean up and paint up campaign bureau in Washington is necessary for all other members of the industry to join the ranks of "those who know."

When Charles J. Caspar, past president of the National Paint, Oil and Varnish Association, and former chairman of the national clean up and paint up campaign committee, in an address before our associations, said that after a year of intimate experiences with the Campaign, he revised an initial estimate of its annual sales from ten million dollars to fifty million, he knew whereof he spoke!

Gained Strength in Depression

Few business activities can show better records in 1932 as compared with 1931, yet our sales of clean up and paint up supplies, on the basis of actual cash collected, despite reduced prices on some items, have been somewhat larger in 1931-32, ($7,461.64), than they were in 1930-31, ($7,278.92), although less than in pre-depression years, when our co-operators were better able to invest money.

A new window display, "Catch Up With Repairs Now," and featuring a group of workmen with a painter in the van, and the two new window cards—all made by the oil paint process—constituted the only additions to the standard line of clean up and paint up display material. An approximate total of 7,500 of these new pieces of display material—practically all that were purchased by the bureau—were sold, in addition to the standard material.

Clean up and paint up posters, window cards, printed matter, etc., are produced locally at local expense for the part, the stock of supplies at national headquarters being for auxiliary convenience, and especially to enable members of the industry to tie in with the Campaign in the right way. Regardless of the amount of clean up and paint up campaign material which is printed locally by outside interests, your Committee urges all members of the industry to purchase and use as much as possible of the official display material which is made available by our national clean up and paint up campaign bureau in Washington, at prices intended to cover only the bureau's own cost and handling. . . .

Rigid Economy in Bureau

Our bureau has operated in close conformance with its budget, which is now approximately one-third the amount of money which was available in the years of general prosperity. The present personnel consists of three people, Ralph W. Emerson, executive secretary, George I. Messinger, assistant to the executive secretary, and Miss Mary L. Espey, under the general direction of George V. Horgan, general manager. Existing designs of newspaper mats and other material, for the most part, have been used repeatedly as a measure of economy, and only enough new designs absolutely necessary to freshen the appeal have been purchased.

Co-operation by Newspapers

Economy has necessitated the restriction of mat service to specific requests from newspapers. Approximately 19,000 clean up and paint up mats have been sent to newspapers in response to requests during the past year, and often a single mat costing only from five to seven cents has been made the basis for a full page of clean up and paint up publicity for which the newspaper received full payment from diversified community interests, including businesses so remote from the paint trade as women's wear shops, groceries, doctors, dentists, beauty parlors, milk dealers, hotels, theatres, florists, nurserymen, in fact all the interests in the community. . . .

Front page publicity, full pages and double page spreads, are the rule rather than the exception in the clean up and paint up editions of newspapers, which are sent voluntarily to our bureau. While present finances and personnel do not now permit the subscriptions to clipping services and the clerical work which would be necessary to check the clippings, it was found by actual measurement in a previous year that the publicity obtained aggregated over four million dollars in a single twelve-month period. Many newspapers keep a permanent file of clean up and paint up mats and use them all the year round.

Public enthusiasm for the campaign never has been greater than it is today. The problems of the depression have caused clean up and paint up to be seized upon by agencies for the relief of unemployment as one of the really practical methods of creating jobs and new business, with the paint business as one of the foremost beneficiaries.

(In explaining how contacts are made, the report states that work is now handled largely through national and regional organizations which in turn contact their own local organizations at their own expense. In this way, the campaign is in touch with 14,500 women's clubs, 2,500 rotary clubs, 2,626 Lions clubs, many kiwanis and exchange clubs, chambers of commerce, junior chambers of commerce and unemployment relief organizations. In connection with the latter, the report presents the endorsement of President Hoover's organization on unemployment relief, as follows.)

President Hoover's Organization

In the 1331-32 campaign, President Hoover's organization on unemployment relief established liaison for us with 4,200 local unemployment relief organizations and vigorously endorsed co-operation with our national clean-up and paint-up campaign bureau.

Department of Commerce Co-operation

Our national clean-up and paint-up campaign bureau has established a practical, working contact with the committee on reconditioning, remodeling and modernizing of the Department of Commerce, and is actively assisting in servicing modernizing of property campaigns promoted by that organization.

An example of United States Government co-operation was the issuance of a four-page illustrated check list, "Put Men to Work—Clean Up—Paint Up—Fix Up," signed by E. C. Johnson, special agent of the United States Department of Labor, and chairman of the job finding campaign in Boston, which laid stress upon painting and varnishing jobs.

(The report also gives instances of numerous state-wide campaigns in which governors have been active, and it deals with specific cases of how clean up and paint up has relieved unemployment in numerous communities. The national clean up and paint up campaign now holds full membership in the National Fire Protection Association. Much of the report is devoted to specific instances of increases in paint sales and employment in many American communities, where vigorous campaigns have been fostered by the local organizations. The high lights of these cases are given herewith.)

Winston-Salem, N. C.—1,360 homes were repainted.

Meriden, Conn.—$650,000 in work was pledged in American Legion drive.

Tulsa, Okla.—Ten dealers reported campaign increased their business 50 percent over 1931.

Lubbock, Texas—88,862 painting jobs listed, a 34.5 percent over 1931 totals.

Chicago—116,837 paint jobs, which required $406,592 in materials are reported to campaign headquarters.

Houston, Texas—7,700 days of work created for jobless men, with an attendant expenditure of $64,000 for labor and materials.

Pittsburgh—Beat last year's record with 1,683,049 paint up jobs.

Montreal—Sales have shown a splendid gain.

St. Cloud, Minn.—$500,000 worth of jobs reported.

Buffalo—Painting jobs totalled $188,000 in canvass.

Milwaukee—Three out of every five pledge cards included home painting work.

St. Louis—Campaign recorded 105,219 painting jobs with an estimated sales of $500,174 worth of paint and varnish products.

Hamtramck, Mich.—Despite fact that more than half of families are out of work, model clean up and paint up campaign is achieved with 4,396 paint jobs.

New Orleans—Spring and Summer campaigns brought success beyond expectation.

Credit Situation

President Maston: The next order of business is again an outstanding feature of the program—they are all features, everything we have had has been a feature, and this one is no exception. This year it is headed, "The Credit Situation." I don't know of anything that we have heard more about since this convention opened yesterday morning, or this joint convention opened yesterday, than the matter of credit, national credit, state credits, city credits. I wonder at times if we don't miss the fact that we are all very much interested in credits, and I might add collections which isn't on here this time.

We have had a wonderful committee in this association work. It isn't possible for us to tell them frequently enough what we think about the work they are trying to do. We tried to help them, but we haven't done a very good job. They give us ideas and it is just hard to make them gear in and click, but if the committee will only be patient with us and the committee will only carry on, I assure you we will get hold of their ideas and as we get hold of them, the credits and collections of this industry, I think, will be higher than the average industries. It is a great deal of pleasure to commend this committee and to present to you Mr. Kenny of New York.

Credit and Collections Report

T. J. Kenny:—Mr. President and Gentlemen: During the past year the activities of the members of the credit and collection committee have been devoted largely to the development of local paint credit units as outlined in the national paint credit plan submitted and approved at the convention last year in Atlantic City.

National Paint Credit Plan

The plan provided for the establishment of units in twenty-nine major paint markets. At this time there are in existence paint credit groups operating in eighteen of the twenty-nine selected markets. Thirteen units of the eighteen conform 100 percent to the national paint credit plan and have national interchange, while the remaining five units operate independent of national clearance, although a number of their members subscribe to national clearance.

Results have indicated that the effectiveness of local paint groups depends entirely upon the earnestness and degree of application of their members. Where the members of a group apply themselves to group work with the same sincerity they approach their office duties, they invariably develop an aggressive and highly beneficial credit group that pays them substantial dividends. On the other hand, where group work receives indifferent co-operation from its members, a mediocre group with ordinary benefits ensues.

Bad Debt Losses

The survey of bad debt losses for the year 1931 indicated a further increase in bad debt losses, not only in percentage of losses to sales, but an actual increase in dollars of loss, as compared with any of the previous five years. While the preliminary report of the census manufacturers of the Department of Commerce reported a decline of 38 percent in 1931 sales volume in the industry as compared with 1929, the bad debt losses in dollars were 25 percent greater for the year 1931.

The percentage of receivables to sales also increased from 15½ percent in 1929 to 17.9 percent in 1931. (A copy of the 1931 bad debt survey has been mailed to every member who contributed the information.)

It is anticipated that there will be a further increase in bad debt losses for the year 1932, as well as a substantial decline in sales volume.

With declining sales volume and the corresponding decline in gross profit, it becomes painful to find it necessary to substantially increase the item of "bad debts," when all other items in the profit and loss report have been cut to the bone.

The continued upward trend in bad

Murphy Varnish Company

Newark Chicago San Francisco

debt losses urges your committee to again solicit the united action of the firms in the industry to combat this costly condition, and recommends the following program:—

1. As a credit man's accomplishments depend largely upon the degree of completeness of his credit information and the use he makes of that information, we recommend that the executives of the firms in the industry provide their credit men with memberships in their respective paint credit groups and urge their credit men to actively participate in the operation of their groups.

2. An item that has contributed substantially to the heavy bad debt losses has been the spring dating order. In failure where paint suppliers have been creditors, it has been common to find that their accounts frequently contained unpaid spring dating orders, when added to the current invoices created a very large balance. This balance in some instances equalled or exceeded half of a year's purchases. While your committee recognizes th benefits that accrue when stock orders are sold on dating terms at the proper time and in the proper amounts, it strongly recommends an exhaustive credit investigation before booking any orders that bear other than current terms. This applies particularly to dating orders solicited this fall, because of the following reason:—

The majority of financial statements available in the average credit files represent the condition as of January 1, 1932. Sales volume from January to October has been generally substantially below the same period of 1931. If expenses have not been reduced in proper proportion to declining sales volume, heavy operating losses have resulted. In many such instances, bank loans and merchandise credit lines that did not appear to be out of proportion January 1, 1932, have since been curtailed or withdrawn, causing a further shrinkage in funds so necessary to finance current operations. In many such instances, both the customer and the supplier will be benefited if no attempt is made to sell a stock order on dating terms, as it will relieve the customer of an obligation he may not be financially able to take care of at maturity, and will minimize the amount of the risk for the supplier.

3. There was never a period in the past ten years where the need existed to assist customere in administering their financial and operating affairs. The credit man today has the opportunity to preserve a very considerable sales volume for this year and future years. Many paint and varnish outlets that contributed very satisfactory sales volume in the past have not taken advantage of available economies to reduce their overhead in reasonable relation to their declining gross profit, or they have continued extending "moral risk" credits on the basis that seemed to work out satisfactorily in 1928, but does not appear to be workable in 1932. Your committee recommends that credit men in the industry acquaint themselves with the conditions surrounding this class of customer, so that remedial steps can be promptly applied, to prolong their existence, where their present sales volume will permit. While consumers will always find a source of supply for their paint requirements, it is reasonable to assume that the paint industry will secure a larger share of the available national spending power, as its business-seeking outlets are maintained and increased.

4. When an outlet has become involved to the point where it cannot satisfactorily care for its obligations, your committee recommends that the major creditors co-operate so that if the outlet can be perpetuated, the owner will have an opportunity to preserve his investment. Where the earning possibilities of the business or an over-obligated condition will not justify further operations, your committee recommends that the major creditors co-operate so that the best means of disposing of the outlet is assured.

5. There is room for improvement in the industry in reducing the percentage of investment in accounts receivable to sales volume, by a more careful application of payment terms. Some credit authorities believe that payment terms should be governed largely by inventory turnover possibilities. On this assumption, and governed by the experience of certain firms in the industry, we recommend for the consideration of the members of the association standardization of payment terms as follows:—

a.—Industrial accounts purchasing paint and varnish products for maintenance purposes—30-day payment terms.

b.—Industrial accounts purchasing paint and varnish products for production purposes—30-day payment terms.

c.—Dealers located in larger cities where their suppliers have a stock, enabling the dealers to operate on smaller inventories and having the sources available for prompt deliveries—30-day payment terms.

d.—Dealers located in cities or towns where the suppliers do not carry stocks, making it necessary for the dealers to carry heavier inventory investments—60-day payment terms.

e.—A movement has been under way this year to develop a general use of trade acceptances to close open account transactions. Your committee finds several firms in our industry that have been using trade acceptances to close shipments that bear dating terms, and they report it is a very helpful means to facilitate collections, and could be used as a means for borrowing when occasion warrants.

It is the opinion of the members of this committee that a general use of trade acceptances in the industry to apply to dating shipments would be productive of good results. Its use would unquestionably influence prompter payment of dating invoices.

Shorter terms will accomplish improved turnover in the industries' accounts receivable at a smaller percentage of investment to sales volume.

Your committee respectfully submits the above recommendations for your consideration and is very thankful to the members for the co-operation it has received during the past year.

Mr. Kenny's Comment

Now, gentlemen, I would like to add a few words to that report. It has been my privilege during the past year to have participated in the formation of several of the larger paint credit groups, and I have found from that experience that about the only objection that has been raised to the national paint credit plan has been the item of cost. Some firms have felt that with conditions prevailing the way they were at the present time, it was not wise to increase any item of expense in the budget. Gentlemen, isn't the principal purpose of a budget to enable management to best determine the wisest way in which to spend its money, and if a management was considering some piece of equipment in the plants that may have originally cost $5,000, if by the addition of $100 or $200 in cash outlay, it would be the means of substantially increasing the efficiency of that equipment, I am sure that management would feel that that expenditure was warranted in order to receive the compensating benefits. Now what applies to an equipment in a plant also applies to a credit department. Very little money that you spend in your credit department expense actually goes for the purpose of credit information. The vast portion of your credit department expense is used up by salaries, rent, legal and collection fees, traveling expense, and bad debt losses, and still the decisions of your credit men as to the business they should receive and the business they should reject has to be governed very largely by the credit information at their disposal.

Gentlemen, you can very readily see that if that information is incomplete, the credit man, by the absence of that information, can reject desirable business or can accept undesirable business. I have seen many instances in my experience where a credit man simply by the addition of several payment performances has been able to confidentially accept business that he might otherwise reject because of the lack of that information, and you can appreciate that the loss of one good order or the acceptance of one bad order can very quickly cancel the cost of credit service.

I would like to say a few words in connection with the investment of accounts receivables to sales volume. As this report indicates during the last several years the investment in receivables in the industry has increased in proportion to sales volume. Our records will show us in the past that as that investment went up in proportion to sales, bad debts losses subsequently increased.

Steps to Be Taken

Now, there are four steps that we believe will reduce the investment in receivables to sales. The first step is the time of extending credit. At that time, proper steps should be taken to secure adequate information to justify the lines of credit extended. If you put a bad account on the books at the start, it will not get to be a good account. Step number two should be in the shortening of payment terms. Step number three should be in the more intelligent solicitation of dating orders, and step number four should be in closer co-operation with our dealers, which I will discuss a few minutes later.

Our national paint credit plan, we feel, provides a means by which step number one can be improved, and the recommendations incorporated in this report today, we believe, furnish means by which steps Nos. 2, 3, and 4 can also be improved.

I would like to say just a few words in connection with bad debt losses.

Heretofore all of the figures that we have compiled have been the bad debt losses suffered by the manufacturer. No attempt to my knowledge has been given to developing the bad debt losses of our dealers. I believe that if any data of that kind could be compiled, all of us would be startled at the result we would see.

A month ago I had an opportunity to talk to a dealer in one of the large cities in the middle west. He was a wallpaper and paint dealer. He told me that they had started an association in their city, and this association was comprised of the vast majority of the wallpaper and paint dealers. He said that they arranged to record the questionable accounts or the bad accounts that their members were carrying on their books, and he said that the total exceeded $400,000, and that is just one city in the country, and no doubt there are many other cities where our customers are in the same shape.

Helping the Dealers

Gentlemen, it seems to me, and I think our experience will show it, that dealers' losses ultimately become manufacturers' losses for any one of several reasons. One reason, for instance, would be this—and I think I can give an illustration that will carry the point—a few days ago I was talking to another wallpaper and paint dealer. This man has been a very successful operator in the wallpaper business. He has been conducting a paint department for the last four or five years. He showed me his figures for last year. He said, "I think I will give up the paint department, I don't believe it is profitable." Well, his figures indicated that he had a satisfactory sales volume. He had a reasonable gross profit. His salary expense was considerably out of line, and his bad debt losses were 5 percent of his sales volume.

Now, if the paint industry is going to grow, if it is going to attain the heights we desire, doesn't it seem sensible to assume that this dealer, the man through whom we must sell our products, must get a fair return for his efforts? Now, by fair return I don't mean that the manufacturer should be asked to give better discounts, nor do I mean that he should give more sales or advertising allowances, but I do mean that the manufacturer in the future will find it to his advantage to take an intimate interest in the affairs of his dealers, to see that they are furnished with sensible business advice and judgment so that in the development of the sales volume, they will aim to secure a reasonable gross profit, and they will aim to conduct their business operations so that their overhead expense will be low enough to leave them some net profit, and that on top of that, they will be educated to check their credits and their collections so that at the end of the year they will not have to write off that net profit and posisbly some of their surplus, but will be able to keep that and have that as a return for their efforts. After all is said and done, the dealer's success is reflected in the manufacturer's success, and the dealer's failure means additional losses for the manufacturer. Thank you very much!

President Maston: Mr. Horgan, what was the action of the board on this report.

General Manager Horgan: The board approved the report with its recommendations and referred it to the convention for consideration and action.

J. F. Kurfees: I would like to ask the gentleman if he would mind going over those terms again for us.

(Mr. Kenny reread the terms as given in the report.)

Mr. Uehlinger's Remarks

H. Uehlinger:—I think all of you have appreciaed the fact that it is not only a credit report, it is a constructive sales report in addition. Credit morality has sunk a great deal in the last two or three years. Two thousand years ago, when a man owed money and he couldn't pay in Egypt he was permitted to give his father's mummy or his mother's mummy as a pledge, and not to repay the debt and thereby redeem the mummy was considered the greatest disgrace that could befall a mortal. Within a month a famous actress went into bankruptcy, and her statement to her lawyers and the public was that she couldn't afford to be bothered by her debts; it interfered with her talents. I want to say there are sixty-six percent of the major centers in the country who have supported the credit bureau as outlined by this association, propagated by Mr. Kenny, who is doing a real big job traveling around the country. We ought to have the other thirty-four percent actively engaged in that work, and I want to give one illustration before I sit down to indicate how important it is.

A number of us here know an account in New York that ran very big and the members of the New York bureau have pulled out, only to find, within two or three months, that two non-members of the bureau went in there to the tune of $7,000 apiece. If they had been members of the bureau and had the clearance that comes automatically with and without a request for report, which flows back to you after you give credit information—it automatically comes back to you even though you are not selling the account. The reason we know the non-members went in, the information came to us and we found that the uninformed member went into a dangerous account that has resulted in a severe loss. I dare say the mere saving of a few hundred dollars in order to cut down the budget is a very costly bit of false economy.

W. H. Gerke (Indianapolis):—I take it in your report that you do not make any recommendations in regard to discount terms, but I take it there is the option of a discount in ten days.

Mr. Kenny:—We have this in mind, that the usual cash discount should apply. Our objective should be to cut down our investment for the sales volume we do. We thought these steps were the first steps whereby we could get a general standardization of payment terms around the country.

Mr. Gerke:—I think the idea is splendid; I have been advocating it for some time. One question is the question of adopting sixty-day terms in one section and thirty-day terms in another, and where are you going to draw the line, because it will eventually travel about that you are giving this man in this town thirty-day terms and another man sixty-day terms.

Mr. Kenny:—At the present time quite a number of the large manufacturers are operating on that basis. I can say that our firm does that. There is every sensible reason why we should do that.

Mr. Gerke:—I would like you to ask some of the members how many are favorable toward adopting a plan of that kind.

S. R. Matlack:—Unfortunately for adopting those terms, I think the paint and varnish industry have practical terms of their own, carrying a sixty-day term. That means it would have to go before the company, be adopted, then comes back to the other association and be taken up by the American as to the individual concerns, as it would change their entire line of billing.

Discussion of Procedure

General Manager Horgan:—As I understand it, this is a joint committee representing both associations.

Mr. Matlack:—I wonder if this should be acted on by the National, with the majority of the paint manufacturers already gone home?

General Manager Horgan:—All of these matters were acted upon by the Manufacturers' Association where there were joint reports, so they have approved this report.

Mr. Felton:—I do not think that is the case. While I am heartily for this, Mr. Kenny, I do not believe this matter came up before the board of directors of the American Paint and Varnish Manufacturers.

General Manager Horgan:—Except under the group reports at the finish.

Mr. Felton:—But it was not discussed in any way, so I do not think we can really say that they have approved it.

General Manager Horgan:—If they approve the reports that haven't been gone over in detail, as a whole, doesn't that take care of the situation? You will remember that during the last half hour there they were so pressed with things that they had to treat with several reports collectively.

Mr. Felton:—This seems to me is a very concrete illustration as to why we should not have a convention in a half day.

Mr. Matlack:—I wish we could put all the accounts down to ten days, but I think for the present there are many paint and varnish manufacturers who have contrary views, I am sure.

Mr. Gerke:—I believe if a careful survey were made, it would be found that practically all manufacturers, except those doing trade sales business are now on thirty-day terms. The raw material people, we know, are on thirty-day terms.

Mr. Kenny:—And we do have firms in the industry selling to dealers and jobbers that are selling on thirty-day terms. I refer to manufacturers.

Mr. Heckel:—I would like to make the remark that I hope there will be no attempt to make an agreement on anything of this kind, but that it will go forth as a recommendation. There are reasons for that suggestion.

Walter O. Yarnall (Philadelphia):—There is another phase of this subject which occurred to me. I approve of selling merchandise rather than terms, but what are you going to do with a man who now doesn't pay in sixty days if you give him thirty-day terms? The only thing that I can see, in order to accomplish any definite results, would be to say, "We won't give you any more merchandise unless you bring that account up to thirty days," and in that case he is going to turn around and buy it from somebody else.

Mr. Gerke:—Mr. Yarnall, I imagine that is all a matter of the credit department. If you have thirty-day terms, on the thirty-first day it is an overdue account. If you have sixty-day terms, it isn't overdue until the sixty-first day.

Mr. Kenny:—That same problem is going to exist if you give ninety-day terms. But you will have more money involved.

Mr. Gerke:—At certain periods of the year if you have sixty-day terms and you place a certain limit on the account, that account may run way beyond its limit before you can say anything is due, and to ask him for money before it is due is merely offering an offense to the customer.

Mr. Kenny:—That would apply particularly to the account where you would be required to give them a low line of credit.

Mr. Gerke:—That would apply particularly next year.

Mr. Kenny:—There are some this year.

Mr. Uehlinger:—On the question of terms, I was chairman of the committee of the National Varnish Association some eighteen years ago. It took quite a few years to put into effect our recommendations as to terms. One or two factories held out for a long, long time. I believe that this matter can best be settled by the manufacturers individually. It is absolutely important that paint and varnish terms be shortened because if you have sixty-day terms printed on your bills you have many buyers, especially in the large cities, who in sixty days will buy a lot more than you care to give them and it does put a weapon in the credit man's hands if you make it thirty days.

Trade Acceptances

Mr. Yarnall:—I would like to mention the subject of trade acceptances. There has been quite a bit of publicity given to increasing the use of trade acceptances during the past months, and it seems to me a very valuable step from several angles.

I just wondered whether Mr. Kenny has any more information he could give us in regard to the use of trade acceptances and particularly in regard to the discounting of them at banks in order to secure that money immediately. In my own case, at least in one or two cases, I found a great reluctance to discount trade acceptances even though they were apparently perfectly satisfactory.

Mr. Kenny:—I believe where they would be particularly advantageous in our industry would be in connection with dating invoices for this reason—I am sure we all have had similar experiences—you sell a man that is inclined to be a little bit slow, but you believe he is worth a line of credit. You give him a dating order in the fall, or early spring. That dating order is for a comparatively large amount of his yearly purchases. You want to get him on a basis where when that dating order comes due he will recognize that it should be paid then, and he will prepare for the payment of the dating invoice, and he won't go ahead and take the money that is secured for that paint and spend it for the payment of other lines that he may handle.

Now, there are one or two firms, big firms, in the industry today, that have been using the trade acceptance and they say they receive a real benefit from them, for the reason that a number of these dealers prepare to meet their trade acceptances as they would prepare to meet notes, and they do not make the same preparation to meet a dating invoice when its is an open account.

I do not think that I can say very much to you as to what the bank's attitude would be with respect to borrowing. It would be my belief that a bank's attitude would be governed very largely upon the financial responsibility of the one who gave the acceptance and the one who accepted it. I cannot imagine any bank taking an acceptance if they do not know the responsibility back of it, and just because it is a different kind of a paper than a note to arbitrarily extend credit there if they wouldn't extend it otherwise, but I think there are many instances where they are getting better rates by the use of a trade acceptance than even on their own notes, and I know that some of the firms, big firms in the country are pushing it very hard, even to the extent of permitting the issuance of trade acceptances for the purchase of material, so that their vendors can get their money whenever they need it, and by that means increase bank deposits and increase the manufacturing possibilities of those units.

President Maston:—You have this report before you with the recommendations of Mr. Kenny. What is the pleasure of the convention?

(It was voted that the report be adopted.)

President Maston:—We are now up to unfinished business. Mr. Horgan, is there any unfinished business?

Traffic Achievement

General Manager Horgan:—There is just one matter under unfinished business, and it is a very important matter. You recall this morning in my brief reference to the activity of Mr. Leveille in the traffic bureau, in his efforts to get a reduction of classification on our products, I stated at that time that the prospects were favorable, that Mr. Leveille was in New York. Mr. Leveille arrived this afternoon and says he has a definite announcement to make on this particular subject, which I am sure you will be glad to receive because it means a tremendous saving to all the shippers in our industry.

Mr. Leveille's Explanation

Mr. Leveille:—Mr. President and gentlemen: Your committee has been working for a number of months now interviewing traffic officers of large railway lines in the interest of securing a re-

storation of the fourth class rating on paints, that, prior to June 15, 1930 prevailed for a great many years. It is very gratifying to be able to announce that this rating has been approved by the southern lines and the western lines and lastly, by the eastern lines. In the south, the fourth class rating will be effective on the twentieth of November, in the west on the first of January, and in the eastern territory probably on the fifteenth. The legislation has been approved and there only remains the mechanics of publication, filing and posting required by the Interstate Commerce Law.

The difference between third and fourth class ratings is the difference in the charges for transportation services of about thirty per cent, and I think you will appreciate that that is going to be a considerable saving.

The carriers, in making this reduction, are doing so with the hope of retrieving a very large volume of the paint business that has been diverted in the past two years from their service to the highways, and the expectation that the increased volume will compensate them for the reduction in the territories where highway services are not available.

I want to take this opportunity to bespeak your consideration for the trials and tribulations of our carriers We have had very encouraging and satisfactory cooperation from them in our efforts to secure transportation rates for our raw materials and finished products that would permit the manufacture and distribution of paint products at the lowest possible rates.

There is just one thing more, and that is that in the northern territories, the fourth class rating will apply, in addition to paints, to lacquers and varnishes, and of course that is a very much lower rating, both actually and relatively on varnishes and lacquers than we have ever before enjoyed. Unless there are some questions, I want to conclude by expressing my appreciation to Mr. Horgan and your officials for the encouragement and support that they have given your committee, and also to pay tribute to those members of our committee who have been so active and so wonderful in cooperating with your chairman in the performance of his necessary and sometimes difficult duties.

President Maston:—I am sure that is very pleasing information to our industry. Are there any questions that you desire to ask?

(The report of the joint traffic committee, of which Mr. Leveille is chairman, was not read. It is as follows.)

Traffic Report

On behalf of the traffic committee, a joint committee of both associations, this report for the year 1931-1932 is respectfully submitted. Before proceeding to an account of its activities, it may be interesting to refer briefly to the situation of our railways.

The railways of the nation represent a capital investment of approximately $20,000,000,000, and are one of the nation's major industries. National attention has lately been focused upon their operations, particularly the financial results thereof by formal announcement by Walter Bennett, president of the Emigrant Industrial Savings Bank, of the organization of a non-partisan railroad commission, under the chairmanship of former President Calvin Coolidge, to survey the transportation situation and formulate recommendations for their relief and improvement. The members of the committee appointed to serve under Chairman Calvin Coolidge are: Bernard M. Baruch, vice chairman; Alfred E. Smith; Clark Howell, Atlanta; and Alexander Legge, Chicago.

The net railway operating income of the carriers has shown a progressive shrinkage over the last few years. Consider the figures:

1928	$1,194,487,806
1929	1,274,595,403
1930	884,556,142
1931	531,495,961
1931 (seven months)	297,464,734
1932 (seven months)	123,925,227

The net railway operating income for the seven months ended July 31 was 58.3 percent below the same period in 1931. The indicated annual net railway income based upon the assumption that the first seven months produce 50.7 percent of the annual railway operating income is approximately $250,000,000—interest on funded and unfunded debt $518,000,000. Nor do these figures, startling as they are, present a complete picture. A comparison of operating revenues and expenses for the first seven months shows a reduction of $251,637,259 in expenditures for maintenance, and this, you will note, is more than twice the $123,925,227 shown as net railway operating income. But for the curtailment of maintenance there would have been no net railway operating income at all, but a substantial deficit.

This situation finds reflection in their purchases of materials and supplies, which have decreased from $1,395,928,000 in 1927 to $695,000,000 in 1931. Consumption of painters' supplies and chemicals have shown a corresponding shrinkage from $35,397,000 in 1927 to $17,800,000 in 1931.

This contraction is believed to be an important factor in prevailing conditions, and the return to the rails of any substantial part of the traffic that has been diverted to other channels will measurably contribute toward rehabilitating their traffic and revenues. A change of policy toward the carriers is indicated, and your traffic committee is considering what measures can properly and should be taken by it in this direction.

The 15% Case—1931

As a result of rapidly declining revenues already noted, the carriers petitioned the Interstate Commerce Commission, June 16, 1931, for authority to impose wide-spread increases in charges for their freight services. In its decision, October 16, 1931, general increases were authorized to become effective January 4, 1932. These increases, styled emergency charges, were to be in effect for a limited period to end March 31, 1933—continuation after that to depend upon conditions then existing. In its decision the commission expressed the view that there are probably many descriptions of traffic as to which increases in rates might be justified.

> In addition to these pending revisions and others which are in progress on our docket, we believe that the traffic departments of the railroads should address themselves to the task of making such changes in the rates on particular kinds of traffic as will, in their judgment after careful analysis of all attendant circumstances, produce additional revenue, and which can be supported as reasonable under existing conditions. This does not necessarily mean increases in rates. It is quite likely that there are now many rates which will produce more revenue if they are reduced, and we include in this category rates which we ourselves have prescribed as maxima. Some such rates have already been reduced, but we fear that there is at times a reluctance on the part of traffic officers, because of possible contingent effects, to cut below these rates even when they believe that the result would be to railroad advantage. But in addition to reductions, it is not at all unlikely that there are a considerable number of rates which can be reasonably advanced substantially, even under present conditions.

—15 *percent case of* 1931, 177 *ICC* 517.

Responsive to this invitation, the carriers have been making a study of their rate structure and have suggested many revisions; all of them with view to increasing their revenues, but for the most part by increasing charges for services.

Rates on Pigments

Among the many proposals initiated by the carriers' eastern commodity rate revision committee was one to cancel existing commodity rates on paint pigments, that is, lithopone, red lead, white lead, litharge, sublimed lead, zinc oxide, zinc sulphate, titanox, titanium, and titanaphone. These pigments are comapartively low in value and are moved in large volume in heavily weighted cars. The rate structure has been developed responsive to commercial and competitive situations and is generally regarded with satisfaction. The proposal of the committee to cancel these rates and place all of these commodities on sixth class basis would have resulted in uniform increases, and would also have disrupted the competitive relationships which have been developed over a generation. Appearances were entered by your traffic committee in support of the position of the pigment interests in opposition to these increases, and we have only recently (September 15, 1932) been advised that the committee is according the matter further study with view to meeting the wishes expressed.

Rates on Paints, Varnishes and Lacquers

Acting on the commission's suggestion in its report in the 15 percent case—

> It is quite likely that there are many rates which will produce more revenue if they are reduced, and we include in this category, rates which we ourselves have prescribed as maxima.

we ventured to reopen the question of the ratings and rates on paints, varnishes and lacquers. This was first submitted to the carriers classification committee for reconsideration, and notwithstanding the impressive showing made, the classification committee concluded to make no change. Some weeks after this decision was rendered, your chairman received a report of revenues and expenses for the first five months of 1931, analysis of which revealed a situation so startling that we ventured to submit for the consideration of our committee members a proposal to recommend the preference of the rail carriers facilities both in the assembling of raw materials and the distribution of finished products. The seriousness of the situation was immediately recognized, but it was suggested that this desirable end would be very materially advanced if the carriers would consider their classification structure with particular reference to restoring the fourth class rating to paints. The soundness of this suggestion was so evident, your chairman approached traffic executives of the carriers, and following several conferences it was concluded to submit the question for the consideration of the several rate associations with view to achieving the desired rate adjustment by exceptions to the classification, allowing the classification itself to remain undisturbed.

This was undertaken with the result that the southern freight association approved the adjustment for their lines and requested the concurrence of their northern connections in joint through interterritorial rates; the southwestern freight committee has approved for their territory and submitted the question of concurrence in through rates from eastern territory to their eastern connections; the question was discussed Tuesday, October 25, with a committee of traffic executives of western trunk line carriers; the following day, October 26, with a committee of Mississippi valley carriers; on November 1 with a committee of central lines, and the subject is on the docket of the eastern trunk lines association for consideration at a conference to be held November 15. These developments imposed upon your chairman the considerable though pleasant duty of contacting numerous traffic executives, acquainting them with developments so that they might exercise an informed judgment. Your committee reports encouraging progress.

Aluminum Paints

The increasing consumption of aluminum paints and the diversity of ratings assigned to this material in the eastern, southern and western classifications, and even in the different packages, has occasioned numerous inquiries, both as to the classification description and the propriety of the ratings; and the propriety of grouping aluminum with bronze and gold paints. As a result of the investigation conducted last fall, your committee felt justified in recommending a reclassification, and suggested the reduction of the less-carload rating from first class to third class—the same rating assigned to other types of finishes.

As a result of these negotiations, the rating was reduced April 7, 1932, from first class to second class. In view of the prevailing transportation and revenue conditions of the carriers, it was thought that their action in voluntarily reducing the rating one class was commendable, although we believed there was merit in the view that specific provision for aluminum paint was no longer justified, and that this new product might well be grouped with other finishes. These proceedings stimulated interest in the subject, and docket 50 (July, 1932) carried two separate proposals, emanating from different interests, suggesting a variety of ratings, and provision for additional packages for which there was no known justification. There was, for example, a request for ratings on both the partially jacketed and completely jacketed cans, although our survey disclosed no movement in these packages. Another request was for lower rates on aluminum paints than for house paints, etc., and this of course could not be justified.

In a communication to our committee under date of June 20, 1932, it was suggested that we adhere to the view that this item be canceled from the classification, allowing aluminum, bronze and gold paints to be grouped with other varieties of protective and decorative finishes as "Paints, N. O. I. B. N." for transportation purposes. This met with the approval of the members of our committee and was again urged upon the consideration of the railroad classification committee; and adopted. Effective October 20, 1932, the provisions for "aluminum, bronze, and gold paints" was cancelled from the classification, automatically transferring these products to the "paints, N. O. I. B. N." grouping of third class. This satisfactorily concludes the question of rating aluminum, bronze and gold paints. The classification entry reads:—

Paints, N. O. I. B. N., Liquid or Paste	O.	S.	W.
In glass or earthenware packed in barrels or boxes, L. C. L.	1	1	1
In glass or earthenware packed in barrels, or boxes, C. L., min. wt. 30,000 lbs.	R26	4	4
In metal tubes in boxes, L. C. L.	2	2	2
In metal cans partially jacketed, L. C. L.	1	1½	1½
In metal cans completely jacketed, L. C. L.	2	2	2
In pails or metal cans in barrels or boxes, or in bulk in barrels, kits, or pails, L.C.L.	3	3	3
In metal tubes in boxes, in metal cans partially or completely jacketed, in pails or metal cans in barrels or boxes, or in bulk in barrels, kits or pails, C. L., min. wt. 36,000 lbs., or in tank cars, C. L., subject to rule 35	5	6	5

The legends "O.," "S." "W.," indicate the official (eastern), southern, and western classifications which, generally speaking, indicate the territories in which the ratings prevail. They also have extra-territorial application, as for instance, the southern ratings apply on traffic originating in the north and terminating in the south; and the western classification ratings govern rate tariffs applicable on shipments originating east of and destined to points west of the Mississippi river, in addition to the local application indicated.

Calking and Glazing Compounds

Several compounds designed for calking and glazing purposes are being marketed in interesting volume, and the lack of specific ratings has occasioned prolonged controversy over the applicable charges, which terminated with the understanding that pending inclusion of a specific entry in the classification, the putty ratings would be uniformly applied. The subject appeared on the public docket, and the folowing entry incorporated in classification No. 7:—

Calking or Glazing Compounds,	N. O.	I. S.	B. N. W.
In metal cans or pails in barrels, boxes or crates, in bulk in iron or steel drums, kits, pails or tubs, with metal or wooden heads, or in bulk in barrels, L.C.L.	3	3	3
In packages named, C. L., min. wt. 36,000 lbs.	40	6	40

This aroused a storm of protests. Several of our members requested your committee to interest itself in the controversy. Several concerns joined independently in a petition to the Interstate Commerce Commission requesting suspension, pending an investigation and determination of the reasonableness and lawfulness of the assigned ratings, but this was denied, and they became effective September 30, 1932.

The subject was brought to our attention in the latter part of August, and realizing the docket closes September 1 and immediate action was necessary if reconsideration was to be had, a petition for reconsideration was prepared and promptly filed with the classification committee. This was granted, and the subject placed on the October docket. Your chairman was able to develop interesting data indicating the propriety of lower ratings, which was presented to the classification committee with a single exhibit, demonstrating the reasonableness and propriety of the requested ratings, and it is gratifying to report that the matter was acted on favorably with the result that the provision above quoted will presently be superseded by the following:—

Calking or Glazing Compounds,	N. O.	I. S.	B. N. W.
In containers in barrels, boxes, or crates, L.C.L.	R26	4	4
In bulk in barrels, kits, pails or tubs, L.C.L.	4	4	4
In packages named, C. L. min. wt. 36,000 lbs.	5	6	5

These ratings correspond closely to the ratings assigned to putty, and for less-carloads are the lowest less-carload ratings accorded to any commodity. Considering the value of the product which is variously represented as 6 cents to 10 cents per pound, and we were unable to develop a lower average than 6½ cents per pound, these ratings may be regarded with satisfaction, especially since third class, the rating initially assigned, was found to be a reasonable less-carload rating for wall cleaning compounds with a value of 6 cents per pound. Climax Cleaner Manufacturing Co., vs. B. & O. R. R. 140 I. C. C. 429.

Linseed Oil in Drums, Kits, Pails, and Unboxed Cans

In our report to the forty-fourth annual convention, attention was directed to progress made in correcting certain classification impediments in connection with the distribution of linseed oil in packages.

Effective October 15, 1930 (Supplement 6 to classification number 6), the carriers, at the request of your committee, amended their classification to authorize the movement of linseed oil in kits or pails at the same rating, third class, assigned to linseed oil in barrels or drums. Under the prevailing classification, a kit or pail is defined as a container of capacity of less than five gallons with a bail. The same container without a bail is defined as a can—and cans must be boxed—and when boxed are rated one class higher, second class. Thousands of these small containers are equipped with "handles" as distinguished from "bails," and members experienced difficulty in having them accepted for transportation without boxing; an unnecessary expense. It was this situation that was corrected by supplement 24 (July 6, 1931), but this anomaly was created—these cans described as "kits" or pails with or without bails, but equipped with "handles" are now accepted unboxed at a lower rating and rate than would have applied if boxed prior to July 1, 1931. Otherwise stated, it amounts to this, that unboxed cans are rated lower than boxed cans. This situation is corrected with the publication of classification number 7, effective September 20, 1932, by reducing the rate on boxed cans from second class to third class. Here is reproduced for convenient reference the entry as it appears:—

Linseed Oil	O.	S.	W.
In glass or earthenware packed in barrels or boxes, L.C.L.	1	1	1
In metal cans partially jacketed, L.C.L.	1½	1½	1½
In metal cans completely jacketed, L.C.L.	1	1	1
In metal cans in crates, L.C.L.	2	2	2
In metal cans in barrels or boxes, L.C.L.	*3	3	3
In metal kits or pails with or without bails, but equipped with handles, or in bulk in barrels, L.C.L.	3	3	3
In packages named, C. L. min. wt. 30,000 lbs., or in tank cars, C. L. Subject to rule 35	5	6	5

* Indicates reduction in rating.

Rates on Chinawood, Linseed and Other Oils

In our report to the forty-fourth annual convention, we summarized the situation of the carload rates on vegetable oils. This case is still in the hands of the Interstate Commerce Commission for decision, and the increased rates originally filed to become effective December 31, 1926, are held in suspense.

Chinawood Oil, Imported—Transcontinental

For many years prior to November 17, 1930, chinawood, cocoanut, palm kernel, perilla, soya bean, and other vegetable and seed oils were grouped in trans-continental tariffs and accorded a common rate of 75c from pacific coast ports to eastern territory generally; that is, as far east as the Buffalo Pittsburg line. Effective November 17, 1930, cocoanut oil was segregated and accorded a rate of 65c—since then the rate on cocoanut oil to Chicago has been 65c, and on other oils, including chinawood, 75c. Chinawood oil particularly is an important ingredient in the manufacture of varnishes and enamels, and is consumed by our industry in large volume. Your committee has consistently maintained that the rates on these vegetable and seed oils should be the same; they possess substantially identical transportation characteristics, are rated the same in the classification, and are grouped in many commodity tariffs; and as already noted, that was the situation in respect to trans-continental eastbound rates until November 17, 1930. The trans-continental lines have recently reopened the question of the rates on chinawood oil for consideration, and your committee took occasion to reaffirm its position. It is gratifying to report that the standing rate committee now recommends an amendment to trans-continental east bound tariffs, reducing the rate on chinawood oil from 75c to 65c to Chicago—and to points east of Chicago in central freight association territory, contingent however upon the concurrence of their eastern connections.

Tung Oil Nuts

As noted in our last annual report, the development of the production of tung oil nuts has proceeded to a point where the movement of the nuts to the crusher may reasonably be anticipated. We approached the carriers individually and through their classification committee, directing attention to this and suggesting that the time had arrived for the southern lines to recognize the effort being made by our industry to introduce and encourage the cultivation of tung oil trees in this country with a view to producing domestically a substantial portion of the industry's requirements of chinawood oil. It was pointed out that this will be a new industry for southern territory particularly, which is well suited, by cimatic and other conditions, to the cultivation of tung oil trees whch will produce additional traffic in tung oil at remunerative rates. Appropriate ratings were asked for the movement of the seed to the crusher. Your committee is gratified to be able to report that effective April 7, 1932, southern lines reduced their less-carload rating from third class to fourth class, and their carload rating from eighth class to tenth class—the prevailing entry is reproduced for convenience:

Nuts, Tung Oil	O	S.	W.
In bags or barrels, L.C.L.	3	4 D	3
In packages or in bulk, C. L., min. wt. 40,000 lbs.	6 or 10		B

This represents a reduction for less-carloads from third to fourth class 20 percent, and a reduction of carloads, eighth to tenth class, 25 percent. It may be that experience with this adjustment will suggest the necessity for further revision—your traffic committee feels confident that it will have the co-operation of the south-

ern lines in developing this traffic and adjusting their rates to the service.

Titanium Dioxide in Paper Bags

Reference was made to this subject in our preceding annual report. When titanium dioxide was specifically provided for in the classification, October 15, 1930, acceptance was conditioned on the commodity being packed in barrels. This is a dry pigment for which a paper bag is a suitable container. Paper bags, in addition to being less expensive than barrels, are more economical to handle in loading and unloading in factory operations. They pack solidly, are not ordinarily susceptible to damage, and are extensively used for the transportation of zinc oxide, lithopone, whiting, ground iron ore, ocher, titanox, dry leads and other pigments. Application had been made to authorize the movement of titanium dioxide in paper bags, and we anticipated favorable action. It is gratifying to be able to report that our expectations have been realized and the classification amended, effective January 30, 1932, to authorize the movement of this pigment in paper bags. This action will confer a saving of at least $50 per car, in addition to the intangible advantages of a more easily handled package in factory operations. The current entry is reproduced for convenience.

Titanium Dioxide

	O.	S.	W.
In barrels, L.C.L.	3	3	3
In barrels or paper bags, see rule 40, section 10 (c), bag No. 4, C. L., min. wt. 36,000 lbs.	5	*6	5

* Indicates reduction in rating.

Attention is also directed to the fact that the carload rating in southern territory is reduced from fifth to sixth class. This also affects the rates on shipments from the north to the south.

Classification of Nitrocellulose

The classification ratings assigned to nitro-cellulose continue to engage the attention of your committee. Nitro-cellulose is extensively used in the production of quick drying finishes, both clear and pigmented. And being one of our raw materials, the charges for transportation services are charged against manufacturing costs. This matter of ratings was referred to in our report to the forty-first, and again in our report to the forty-second annual convention in Washington, October 1929, at which time we reported reductions in the ratings for both carload and less-carload quantities—the carload rating being reduced from second class to third. While this action did not entirely meet our views, it was generally regarded with satisfaction.

Effective September 20, 1932, the ratings on nitro-ce'lulose were further reduced for both carload and less-carload movements:—

Nitrocellulose

	O.	S.	W.
Wet with not less than thirty (30) percent of alcohol or solvent:—			
In glass packed in barrels or boxes, L.C.L.	1	D1	D1
In zinc lined wooden boxes, L.C.L.	1	D1	D1
In glass packed in barrels or boxes or in zinc lined wooden boxes, C. L., min. wt. 36,000 lbs.	3	3	3
In iron or steel barrels, L.C.L.	*2	*2	*2
In iron or steel barrels, C. L., min. wt. 36,000 lbs.	*4	*4	*4

* Indicates reduction in rating.

The large volume moves in iron or steel barrels. These ratings represent interesting economies in the acquisition of an important raw material, and approach very closely the views as to ratings originally expressed.

Solvents, Reducers, Thinners,, Etc.

It will be recalled coincident with the development of nitrocellulose finishes there was introduced a variety of solvents, plasticizers, and other materials entering into the formulation of these finishes. The proper classification and rating of many of these newly developed agents present interesting and sometime difficult questions. As a result of the study given this situation, a classification entry was formulated to cover the entire group, and ratings assigned consistent with their transportation characteristics. This classification description and these ratings continue in effect and represent one of the accomplishments to which your committee points with pardonable pride, as it has prevented numerous disputes over descriptions and ratings, similar to those with which we have had to deal in the past, and provides transportation services at reasonable rates.

The Stabilization Committee

At the request of the stabilization committee, your traffic committe prepared a tabulation of freight rates on paints, varnishes and lacquers, for both carload and less-carload quantities, from fifteen major producing points to one hundred and thirty consuming markets, representative of the volume of production and consumption of these products. As is generally known, the freight rate structure of the country has been subjected to repeated increases and adjustments, which have served to destroy pre-existing ideas of distribution costs, and the tabulation prepared for the stabilization committee served to bring this situation into bold relief and to show the startling costs of serving distant markets and absorbing the transportation charges. Copies of this tabulation were distributed to interested members, together with a study of distribution problems from a purely transportation standpoint which space will not permit reproducing here.

Automobile Top Dressing

The classification rates automobile top dressing separately—when the rating was first established, the dressing used at that time consistsd of sixty percent petroleum and the balance of coaltar dye. This has since changed, and with respect to many so-called dressings, they have all the characteristics of ordinary enamel, but contain a greater amount of volatile liquid, giving the product more penetration and adhesion; and might properly be described as liquid paint but for the fact that there is a specific classification for it; and as it is sold and labeled "auto top dressing," we are obliged to so describe it for shipping purposes. The ratings are the same as assigned to paint, but the minimum on paint is 36,000 pounds and on auto top dressing 40,000 pounds—and when shipping carloads to customers who order just enough to make a minimum car of 36,000 pounds or slightly less, it results in a double charge because of the necessity of assessing charges on the minimum weight, and segregating the weight of the auto top dressing and computing the charges at the less-carload rate. This anomaly should be corrected.

Moreover, in transcontinental tariffs, auto top dressing has been added to the general paint group, item 4262—thus permitting the inclusion of auto top dressing, shipped as such, in mixed carloads with paint, varnishes and lacquers, etc., at the same rate and minimum; but when in less-carload quantities the higher rates prescribed for auto top dressing are applied. Your traffic committee has invited the attention of the authorities to this situation with the suggestion that it might properly be corrected.

Classification Rule 23—Distributing Carloads

Docket number 49 of the consolidated classification committee contained a proposal initiated by the carriers, authorizing the carriers' agents to act as agents of shippers or consignees for distribution of carload freight at a slight additional charge. This means the handling of shipments under railroad auspices that are now handled by both warehouses and trucking companies, with a view to holding final distributive movements to the rail lines; i. e., if the carriers' agents make distribution for the shipper, subsequent movement would be by rail instead of by highway, as much of it is now moving. While such a development would have been interesting to some of our members, the potential damage to the interests of warehousing organizations aroused vigorous opposition. The proposal was defeated.

Classification Rule 41 (2)—Fibre Boxes

Our industry is an important consumer of fibre boxes—for many purposes it is an adequate package—for other purposes it is unsuitable. But the fibre box industry is developing rapidly, and this form of package is subject to constant experimentation, so that not a docket of the classification committee is issued that does not contain proposals for the modification of classification rule 41—the fibre box rule. In many we have no interest whatever, and in others our position is that of an interested observer, but it is essential that proposed changes and new developments be scrutinized in the interests of our industry. Like highway transportation service, the fibre box has a legitimate though limited field of usefulness—it is not a wooden box, and would not be suitable for many purposes demanding the strength and rigidity of a wooden box.

An angle of the fibre box situation that gives point to these observations is the difference in the regulations prescribed by the carriers depending on whether the contents constitute inflammables as defined in their tariffs, and as such subject to the more stringent regulations imposed by the bureau of explosives—one of the differences in the regulations concerns the maximum weights which may be loaded when the contents are inflammable, another the maximum capacity of inside containers, and still another difference concerns the method of closing seams. Classification rule 41 authorizes taping, and this is the method commonly used in our industry. On the other hand, the regulations of the bureau of explosives do not permit taping, but require the tops of the packages to be tightly glued. These differences in the regulations lead to confusion and inadvertent violations. From the standpoint of the busy shipping room, it is often impracticable to always have these distinctions in mind, and thus achieve that harmony between regulation and practice, which is so desirable. Notwithstanding this conflict, your committee offered a practical and satisfactory solution of the difficulty.

Kalsomine

In our prior report to the forty-fourth annual convention, attention was directed to docket 24583, Forman, Ford & Company, vs. B. & O. R. R., attacking the reasonableness of the rates on kalsomine from New York and vicinity, including Harrison and Newark, New Jersey, and asking reasonable rates for the future, particularly reparation on past shipments. This case was decided September 22, 1932, adversely to the contentions advanced on behalf of Forman, Ford & Company. No new principle was established — the commission simply decided that the rates imposed had not been shown to be unreasonable.

It is noteworthy that effective September 20, 1932, the distribution of kalsomine in rule 40, section 10 (c), paper bags is authorized.

	O	S	W
Kalsomine (calcimine) dry:—			
In bulk in double bags, L.C.L	4	4	4
In paper bags, see Rule 40 Section 10 (c), Bag No. 4, or in barrels or boxes, L.C.L.	4	4	4
In packages named, or in cloth or paper bags, C. L. min. wt. 36,000 lbs.	5	A or 8	C

This item continues unchanged except for the authorization of paper bags for L.C.L. movement.

Motor Truck Transportation—Liability for Injury

Despite the importance and interest of other features of the activities of your traffic committee, space will not permit their discussion.

However, there is one inquiry that we continue to receive, and the answer to which it may be serviceable to record here—we refer to the view expressed in some quarters that the shipper by truck can be held for damages sustained as a result of the negligent operation of the truck by its owner. If the owner of the truck is the owner of the merchandise, a different question is presented—but otherwise the goods carried on the truck for a shipper are not liable for the wrongful acts of the driver of the truck; and I have never heard of a case in which the owner of the merchandise on a truck was held responsible for the unlawful act of the truck driver.

The liability is that of the motor truck operator and not of the shipper, as it is the case of carriers by rail or water, regardless of whether the motor truck operator is a common carrier or a private carrier; and in all probability the relationship between the shipper and the truck driver is, in the majority of cases, that of employer and independent contractor, and not that of principal and agent, or master and servant, and the shipper is not liable for the acts of the truck carrier. The responsibility of the trucking company is ordinarily that of a common carrier, and the shipper is not employing the trucking company to act as his agent.

Other Subjects—Conclusion

Numerous other matters have had the attention of your traffic committee—the proposed increase in the rates on asphaltum, for instance—but we forego commenting on them because space will not permit.

It is appropriate to note in conclusion that much progress has been made in the direction of better understanding of transportation rules and practices as a result of the series of bulletins distributed on these subjects. Your committee no longer hears, for example, of complaints arising from the imposition of penalty charges because of failure to impress the fibre box certificate on bills of lading—or the paper bag certificate when that container is used—or the inflammable certificate—many, perhaps most, of our members by now execute the "no recourse" clause, and thus protect themselves from being held contingently liable for transportation charges that should have been collected from others. Your committee has had a volume of correspondence from its members on these subjects and has dealt with them in preceding annual reports.

The foregoing, together with a volume of correspondence and innumerable personal interviews, have rounded out a busy and eventful year.

Ratifications

President Maston:—We are now up to new business. Is there anyone who has any matter that he would like to present?

Mr. Cheesman:—I move that the convention ratify all actions, appointments and resolutions of the executive committee and board of directors of the association during the fiscal year just closing.

(The motion was seconded and carried.)

Mr. Felton:—I have an item of business that I would like to introduce at this time. It is very brief and I hope I will be pardoned.

Mr. Horgan this morning called attention to the fact that this was our forty-fifth annual convention. Thirty-five years ago this association met for the first time in Washington, D. C. The three delegates from Philadelphia at that convention were Fred G. Elliot, of the John Lewis Company, my grandfather, Samuel K. Felton, and Edward F. Beall. The first two have passed on but Mr. Beall is still the managing head of the John T. Lewis Company in Philadelphia. He is a highly respected business man of that city, a past president of the Philadelphia Paint Club, and I would like to move that appropriate greetings be sent to him, and if it be in order, I would like to add that our usual custom of sending greetings to past presidents who are not in attendance be included.

President Maston:—I think that is very appropriate, Mr. Felton.

(The motion was seconded and carried.)

President Maston:—Is there any further new business?

We will now have the report of the nominating committee, to be presented by Past President Frayser.

Mr. Cheesman:—Might I ask that, after the report of the nominating committee is read, we then adjourn for a period of three minutes and go into a fourth business session in order to comply with the by-laws and see that these officers are elected legally?

General Manager Horgan:—I think you ought to explain the reason for that. This year we are conducting our business in two days instead of three, so to be technically correct, according to the by-laws, this actually will be necessary.

Nominations

P. C. Frayser:—Your nominating committee has the honor to present the following ticket, the gentlemen designated to serve as your officers and directors:—

Directors to Serve for Three Years

Chicago, R. M. Neumann.
Columbus, R. S. McKay.
Dayton, L. H. Vinson.
Indianapolis, W. H. Gerke.
Memphis, M. C. Heins.
Minneapolis-St. Paul, V. Wurtele.
Nebraska, G. C. Cunningham.
Portland, Ore., C. B. Van Houten.
Rochester, J. F. Garner.
St. Louis, F. W. Knoke.
Savannah, R. L. Clancy.
Individual member, Arthur Brown.
Individual member, George L. O'Brien.

Executive Committee and Officers

For member of the executive committee, three-year term, R. B. Robinette, Cleveland, Ohio.

For treasurer, Charles J. Roh, Newark, N. J.

For vice-presidents:—
Canadian zone, W. W. Schoales.
Central zone, W. F. Marks.
Eastern zone, Frank Bownes.
Southern zone, D. C. Burnham.
Western zone, C. B. Woodruff.
For your president, S. R. Matlack, Philadelphia, Pa.

Mr. Chairman, I move the adoption of this report and the election of the officers as submitted by the committee.

Mr. Felton:—I second the motion.

Mr. Caspar:—I move we adjourn for one minute.

Momentary Adjournment

(The motion was seconded and carried, and the meeting adjourned for one minute, after which it reconvened.)

President Maston:—You understand that if there are any names to be suggested for any of these offices from the floor, they will be duly considered. If not, the ticket as presented by the nominating committee, is now up for vote. All in favor of receiving the report of the committee and electing, by the secretary casting the unanimous ballot, will stand. It is unanimous and I knew it would be.

(General Manager Horgan announced that the ballot had been cast.)

President Maston:—I am going to ask Past Presidents Caspar and Cheesman to escort the new president, Mr. Matlack, of Philadelphia, to the chair.

(Mr. Matlack was escorted to the chair.)

President Maston:—Sam, I welcome you to this very high office and present you this as a symbol of the office. It has been a great privilege and pleasure for me to serve, and I know that you will find it just the same. You have a fine set of officers that these boys have selected and I will tell you, you have a willing crew, perfectly anxious to follow any of your orders. All success for the coming year.

President-elect Matlack: — Thank you, Mr. President

Gentlemen, it is with a great deal of embarrassment and that hollow feeling in the innards with which I accept this honor, the greatest honor which can be conferred upon any member of the National Paint, Oil and Varnish Association. At the same time, I want you to realize how grateful and how proud I am to have been selected as your pilot for the coming year. Still, I feel that two great mistakes have been made. First, when the nominating committee tendered me this office. It was done in friendship, I feel, and without the proper knowledge of my ability to fulfill a proposition of this kind. The second mistake, and the inexcusable one, was when I, knowing my own qualifications and ability, or inability, accepted the situation. At the same time, having done so, there is no time now to falter but to go forward and as you, as an association, ask the officers and the crew that have been nominated and elected with me, to give me all the assistance possible in steering this great ship, the National Paint, Oil and Varnish Association, on an uncharted course to help me see the hidden rocks, keep me from going in shallow water, and ever keep the prow of this great association turned forward and upward, and at the end of our year, to bring our boat back to her home port, weather-beaten but without a scar of shame and still able to fly the flag at our mast, always in the public service.

Gentlemen, let me again thank you for the honor, asking your absolute help and guidance and forgiveness for the mistakes that I know that I shall make. I thank you, very much.

Knowing full well that the greatest assistance that I will have to have will come from our general manager, I would like him to stand first to fulfill the promise which he has already given me, of his untiring and patient help. Mr. Horgan.

General Manager Horgan:—I am really a little embarrassed to be called upon first. I think I should be the last, but it is needless to say that I will give the best that is in me to assist you and the new crew to bring the well-known ship back into port next year with that old flag sticking up in the air, as you mentioned.

Mr. Matlack:—Is R. M. Neumann of Chicago in the room?

R. M. Neumann:—Mr. President, I assure you I will do the best I can to help you in the new administration.

Mr. Matlack:—Mr. Neumann, you know very little of what you have promised. I have a big job ahead.

Mr. Gerke:—I assure you that I will do everything in my power to assist you.

M. G. Heins:—Mr. President, I assure you it will be more than a pleasure.

Mr. Robinette:—I am at your service, Mr. President.

W. F. Marks:—Mr. President, certainly I will do all I can to make your administration a success. I can assure you that I appreciate the honor and accept it not so much as a tribute to myself as recognition of the Milwaukee Club.

Frank Bownes:—Mr. President, I live on the rock-bound coast of New England where the rocks are jagged and I know what it means to have a ship go on the rocks, and we will help you to keep off it.

President-Elect Matlack:—Is there any other business to come before

this meeting? If not, a motion for adjournment is in order.

Mr. Caspar:—I so move.

(The motion was seconded and carried.)

(The meeting adjourned at four-thirty o'clock.)

Other Reports

(Several reports other than those dealt with in the above proceedings were made by committees of the National Paint, Oil and Varnish Association, but were not read. They are given herewith.)

Manufacturers

C. Dunnng French, General Chairman

Your manufacturers' committee presents for your consideration and information their report as compiled and prepared by the chairman of the respective groups.

We believe that never before in the history of our association have its members been as keenly interested in statistical information and accurate deductions as at present. The old statement so often used "that we have had depression before and we will come out of this one, because we always have in the past" is not sufficient for our membership now. We are keenly alive to the fact that something economically is wrong and must be corrected. If the reports as submitted by the individual chairmen give you information that helps you in the solution of some of your problems, then, we feel repaid for our efforts.

Our industry, in the last year, has suffered the same as all other large industries but it also, we believe, will be one of the first to feel the influence of improved conditions. It would seem to us that we are starting now with this improvement, slight as it may seem.

Let each member keep up his business and friendly contacts with every other member of the association and all pull together, as history has proven a small unit, properly organized, will succeed when disorganized numbers fail.

In conclusion, I wish to thank the chairmen of the various groups for their effort in the time-taking task for the benefit of us all, which has been completed so carefully, and with the finest spirit of cooperation.

Alcohol

W. J. Hough, Chairman

The major part of your alcohol committee's activities during the past year has had to do with laws and regulations—federal, state and local—and it is gratifying to report that results obtained have served to emphasize the relative importance of that chemical in the arts and industries and assure protection to its lawful uses. The principal development in that behalf has been the improvement of existing, and the authorization of additional, formulas of completely denatured alcohol by the bureau of industrial alcohol of the Treasury Department. In that connection, Commissioner Doran continued his policy of consulting with representatives of scientific and trade organizations, including the members of your committee and its counsel. In general circular No. 115, dated June 30, 1932, the commissioner publicly announced the outcome of cooperative research as follows:

Completeely denatured alcohol, formula No. 5, has been improved by substituting for "alcotate," a new petroleum product known as "calorite." The formula has been strengthened, and will be more acceptable commercially by reason of modification of odor. The research staff of the Standard Oil Company of California have been very helpful in the development of this denaturant.

Completely denatured alcohol, formula No. 5-A, introduces a new product, "pentol," which is a complex mixture of secondary and tertiary iso alcohols with other compounds. They are extremely difficult to remove from alcohol, and afford very effective denaturation. The research staff of the Dupont Ammonia Company have been instrumental in developing this new material.

Completely denatured alcohol, formula, No. 10, contains as its basic denaturant a new wood distillation product developed by the staff of the Tennessee-Eastman Company, Kingsport, Tennessee, a wholly owned subsidiary of the Eastman Kodak Company. It is the result of many months of work by the chemists and engineers engaged in wood chemical technology. "Tecsol" is the name of this new material.

A technical committee of the industrial alcohol institute and the research laboratory of the National Paint, Oil and Varnish Association co-operated with the chemists of the bureau of industrial alcohol in this work.

These formulas represent a commercial advance, as well as being adequate to protect the government's interest. The formulas are non-toxic. They provide broad sources of denaturing materials and are a fine example of coordination of government and industrial research.

Brushes

John Henry Coon, Chairman

The manufacturers of paint brushes have for some time past experienced many difficult problems. Drastic declines in the prices of black Chinese bristles, which enter very largely into the makeup of present day brush demands, has meant very heavy inventory losses and, due to lack of professional work, the greatly restricted sales of master painters' tools have seriously affected volume.

While there has been a decided increase in demands and sale of medium and low priced brushes, unprecedented competitive conditions have brought the prices of these brushes to a point where profit has ceased to exist. These conditions also have, to a great extent, flooded the market with brushes so poor in quality that many paint manufacturers in order to protect their products from misapplication have incorporated in their instructions to to the consumer the necessity of using a good brush.

Relief in this direction seems probable however, due to the fact that dealers are now cognizant of this condition and are using much greater care in their selection of brush offerings to both the master decorators and home users.

During the past three months there has been a perceptible change in the attitude of the sellers of bristles in China, and undoubtedly, higher prices will have to be paid for this commodity in the very near future.

Stiff varieties of Chinese bristles in the longer lengths which are absolutely essential in making good painters' brushes are considerably higher in price than they were in the spring and are somewhat difficult to obtain.

Russian bristles have been fairly steady in price throughout the year, with the exception of the long lengths suitable for kalsomine and whitewash brushes, which are decidedly scarce and consequently much higher in price.

In fact, from all we can learn, Russian bristles of this description due to the condition of hog culture in Russia may never again be plentiful.

It is reported that many buyers feel that the price of brushes may still be further reduced. However, with the upward tendency which is fast developing in the primary bristle markets this hardly seems probable.

Brush prices are so low now that any increase in the cost of bristles must very quickly be reflected in the price of finished brush products.

Earth Color

C. K. Williams, Chairman

Since our convention of November last, there have been many changes that have affected the dry mineral color industry. The industry is largely dependent upon the activity of the building trade, railroad equipment, and industries generally. During the early part of this year, there was practically no activity in the building industry. The same condition existed in the railroad equipment business. The railroad companies have done but little in painting and thus preserving the equipment they have in use. Even less is being done in the way of painting either inside or out of the factory buildings standing idle throughout the whole country. Consequently, there has been no reason for the dry mineral color industry to have anticipated any improvement over last year.

We are, however, pleased to report an improvement in demand for the commodities of this industry during the past two months, which unquestionably has been due to a great measure to the constructive measures inaugurated by our federal government in easing credit, and should nothing be permitted to change this policy, we feel that the improvement of the past two months is permanent, and that we may look forward to a steadily growing improvement in demands for dry mineral colors as well as for all other commodities in the paint, oil, and varnish industry.

Chemical Colors

Robert P. Bongie, Chairman

The chemical dry color section of the industry has suffered with the industry as a whole from the depression in 1932, although to some lesser degree. The decline in volume continued until August, which month witnessed an upturn, counter to the seasonal trend, that has continued through into October.

No figures on the output in pounds or dollars available for 1932, but the United States census figures for 1931 in comparison with 1929 show a decrease of 22.8 percent in pounds and 24.8 percent in dollars.

Early in the year the industry lost one of its most distinguished leaders through the death of Arthur S. Somers. There were no other changes of importance during the year; no establishments have dropped out and no new ones have entered.

The trough of the depression appears to have been passed and 1933 is looked forward to with optimism.

Containers

W. McGhee, Chairman

Your committee wishes to refer to program No. 4 of the club program series and to quote as follows:—

There is probably no activity in our industry that is of any greater interest to the entire membership of the National Paint, Oil and Varnish Association than that of simplification and standardization. Its influence is far-reaching and affects all branches of our industry, from the producer of raw materials to the ultimate consumer. The manufacturers, the distributors and the dealers in paint products are most decidedly and definitely affected by this work, and it is, therefore, worthy of the support and co-operation of every member.

This has been a very widely discussed program, and justly so, as an elimination of a number of sizes of containers will be a great saving to the industry. It is not necessary for your committee to go into this subject in detail, as the industry is very familiar with this program.

This work requires the support of every one to be successful, and it is hoped that the assistance required to make it successful will be forthcoming in such a way as to leave no doubt, and that it will establish a precedent for the future as to the attitude and progressiveness of the industry in a matter that is of such vital importance.

Imported Varnish Gums

W. A. Patterson, Chairman

Over the major portion of the past fiscal year all natural resins, in common with most imported materials, were forced to all-time low price levels, and this was particularly true of those gums where sterling exchange was a factor, such as kauri gum from New Zealand and the various qualities of dammar, pontianak, East India, etc., shipped from Singapore.

This break in exchange was an immediate aftermath of Great Britain's abandonment of the gold standard late in September, 1931. For a short time thereafter efforts were made by producers in those primary markets to raise prices to a point commensurate with the decline caused by the collapse in exchange. This attempt was unsuccessful, however, and during the first six months of 1932 values in many instances touched new lows for all time.

Starting with August, however, consuming demand improved very materially, which increased demand, combined with a marked curtailment of production abroad, has naturally resulted in temporary shortages of supplies of many qualities and advances in prices. Whether further enhancement of values may be looked for is solely dependent upon business activity the world over, and he is a wise man, indeed, who can forecast at this time the condition of trade during the coming year, although from the standpoint of our committee, manufacturers will not be gambling to any extent by anticipating at least a portion of their future requirements at the present time.

Lead

F. M. Carter, Chairman

White Lead.—The year 1932 has been the most unsatisfactory season experienced by the present generation of corroders. Not only has the industry been hampered by a shrinkage in sales of its products ranging from twenty-five to forty percent compared with the unsatisfactory record of the preceding year, but, in addition, has had to contend with difficult inventory and distribution problems. The combined effect of these adverse influences has had its inevitable effect upon the industry's prosperity.

Oxides of Lead.—What is said above respecting white lead applies with equal force to oxides of lead. The results have been disappointing in all departments.

1933 Prospects.—The outlook for the coming year, however, is not wholly unfavorable. Sales comparisons with the preceding year were more favorable during the closing weeks of the third quarter than they had previously been. During the past two years a large backlog of deferred painting has been built up. This, together with the gradual reducton in painting costs which is taking place, is certain to have a beneficial influence upon all industries affecting by painting activities. Similarly, the prospects for increased activity of industry in general and particularly the automotive trade, should react favorably upon the demand for lead oxides.

Linseed Oil

T. L. Daniels, Chairman

There is nothing in the statistics available on the linseed oil business in this country to indicate, as yet, any upturn. According to the table prepared by the flax institute of the United States, the consumption of linseed oil in this country for the twelve-month period ending September 30, 1931, was 66,425,774 gallons. During the same period, 28,498,571 bushels of flaxseed were crushed. Consumption in the October, November, December quarter of 1931 showed a decrease of 17.83 percent under 1930; the January, February, March, 1932, quarter, showed a decrease of 26.12 percent under the same quarter in 1931; and the April, May, June quarter showed a decrease of 29.9 percent under the same quarter in 1931. The total consumption of linseed oil in the nine-month period from October 1, 1931, to June 30, 1932, was 38,329,266 gallons.

During the past twelve months we have seen a decline in linseed oil prices from 7.2 cents per pound in car lots cooperage New York city to 6.1 cents per pound, which is today's price. During the same period we have seen a decline in domestic flaxseed prices from $1.25 per bushel for the Minneapolis December option to $1.08¼ per bushel, which is today's price. During the twelve-month period, however, domestic flax has dipped to 91 cents at one time, which is the lowest figure we have seen in this country since 1897.

Linseed meal prices are $2 or $3 a ton less than at the same period last year. Export cake prices are about the same as they were last year.

In regard to flaxseed supplies for the ensuing season, the prospects are not very bright. Our domestic crop started off under ideal weather conditions, and the first government report, issued on July 10, showed an acreage of 2,667,000 and a production of 18,200,000 bushels. Drought and grasshoppers took their toll of our crop during July and, as a result, the October 10 report shows the production figure reduced to 13,200,000 bushels.

Similarly, in the Argentine, weather and growing conditions are exceptionally poor this year, whereas last year idea conditions produced a crop of about 86,-800,000 bushels from an acreage of 8,638,-000. This year's linseed acreage, according to an October 5 report, is estimated at 7,311,000, of which it is stated that 1,100,000 acres have already been abandoned because of destruction by locusts. Grasshoppers are now greatly feared in linseed growing areas of the Argentine.

As to the future trend of linseed oil consumption: much will depend on the general business trend in this country and the consequent buying power of the public. Although it is estimated that only about twenty-five percent of linseed oil goes into new contruction, yet there is no doubt but that the construction figures have an influence on the trend of linseed oil consumption. It is encouraging to note that, during September, there was a slight upturn in building in this country.

One important item which is reducing the consumption of linseed oil in this country is the comparative increase in the use of substitute oils. Recent official figures indicate that, whereas the index of linseed oil prices, as compared with substitute oil prices, are not much above normal, yet the consumption of linseed oil, as compared with that of substitute oils, is forty percent below normal.

Lithopone

Joseph J. Mangin, Chairman

The lithopone industry has been in existence for over thirty years and has progressed steadily throughout this long period, due to the intensive efforts in its research and manufacture to produce a product of unusual quality to satisy the requirements of the various industries using lithopone, particularly the paint and varnish industry, who use a large percentage of this product.

During the past two years, industry in general has gone through an unusual experience due to unsettled conditions. The lithopone industry has been no exception and has suffered with the rest.

Business for 1932 has been somewhat below that of the preceding two years, but recently there have been noticeable signs of improvement due to the increase in consumption of the paint and varnish industry.

We are hopeful that these improved conditions will continue so that we may look forward to an increase in the use of our product throughout the industry for the year 1933.

Naval Stores (Gum Rosin)

J. A. Meyers, Chairman

The naval stores industry has gone through another distressing and highly unprofitable year since the last convention. The lowest prices in thirty years have been reached, turpentine having sold at thirty and one quarter cents and H rosin a $2.10. These low prices have been reached in spie of a decrease of thirty percent in this season's crop. This decrease means a crop of less than 375,-000 barrels of turpentine and its equivalent of rosin, which is next to the lowest crop on record. The largest on record is 750,000 barrels. Had it not been for the cooperation of the entire industry to bring about this decrease it is obvious that prices would have reached even more ruinous levels.

During the month of September when business sentiment abruptly changed, our markets shared in the general advance of most commodities and H rosin touched a high point of $3.20 and turpentine 44 cents representing an advance from the low of fifty-five percent on rosin and thirty percent on turpentine. Since September both markets have again declined but are today on a substantially higher basis than the season's average with every prospect of remaining so and advancing, with the anticipated improvement in world economic conditions. The statistical position of both rosin and turpentine has steadily improved throughout this season. The visible supply at the principal ports is now approximately 43,000 turpentine and 120,000 rosin less than a year ago, which means that our surplus is gradually being consumed. Another short crop with improved consumption would undoubtedly bring surplus stocks back to normal proportions, thus automatically tending to advance our markets to at least a point that would permit the producer to operate at a profit, which is not the case at the present time.

It will probably be of interest to the paint and varnish industry to know how they rank as consumers of naval stores in the United States. The government figures for the calendar year of 1931 have just been published and show the following consumption by the leading industries:

ROSIN

	Barrels.
Paper size manufacturers	299,934
Soap manufacturers	239,869
Paint and varnish manufacturers	155,592
All others	97,575
Total	792,970

TURPENTINE

	Barrels.
Master painters	207,000
Paint and varnish manufacturers	68,977
Shoe polish manufacturers	11,100
All others	6,795
Total	293,872

The above figures are official except the consumption by master painters, which is arrived at by deducting the known consumption from the total consumption in the United States.

Naval Stores (Wood Rosin)

L. N. Bent, Chairman

The following statistics show production of both gum rosin and wood rosin, also rosin exports and balance available to domestic consumption, for each of the last nine naval stores seasons, ending March 31, each year:—

ROSIN (Bbls. 500 lbs.)

The following figures are in "thousands of barrels."

Ending March, 31.	Production—Gum rosin.	Production—Wood rosin.	Total production.	Total exports.	For domestic consumption.
1931-1932	1,666	319	1,985	1,120	865
1930-1931	2,000	439	2,439	1,219	1,220
1929-1930	2,081	467	2,548	1,366	1,182
1829-1929	1,865	432	2,297	1,279	1,018
1927-1928	2,165	409	2,574	1,373	1,201
1926-1927	1,700	365	2,065	1,129	936
1925-1926	1,599	285	1,884	1,083	801
1924-1925	1,765	258	2,023	1,460	563
1923-1924	1,881	202	2,083	1,171	912

Considerable progress has been made with the introduction of dispentene and related solvents for use as special thinners for paint and varnish products. Dispentene is now available in a very pure form and is finding favor as an anti-skin solvent. It is also used extensively to produce better flow in varnishes and enamels of all types.

Pine oil and oxidized pine oil are finding more extensive use as wetting agents for pigments, to improve flow of paints and enamels and generally to promote better leveling and drying, particularly in baking finishes. The introduction of synthetic resins has brought about a need for solvents of this type. New and more extensive use of terpenes in paint, varnish and lacquer products has been brought about by the general use of synthetic resins.

Paint

Denison W. Greene, Chairman

The current year has been most unsatisfactory to the paint industry with universal reports of falling sales and prices and poor credit conditions.

However, the industry, in comparison with other manufacturing enterprises, seems to have weathered the storm of depression in a very creditable manner. We have taken advantage of slack times to put our machinery in better running order, by simplifying lines, improving products through research, and making more accurate our factory cost systems.

It goes without saying that the industry is in excellent shape to profit by any general business pick up which may occur.

Plastic Paint

William L. Pringle, Chairman

During the past year, the plastic paint industry has remained basically sound. Due to a rather decided falling off in volume, many of the manufacturers have endeavored to broaden their scope of activity, and as a result we find several different types of washable cold water paint now on the market, which are a result of the experience these manufacturers have had in the development of casein-bound water-mixed materials.

Some few of the smaller manufacturers have catered to the popular demand of certain markets for very cheaply priced products, with the net result that the inability of the products to satisfactorily perform has had a tendency to discourage decorators and home owners in the employment of texturing materials. Many of us feel, however, that this is only temporary, and that as soon as price alone no longer becomes the clinching argument in a sale, that manufactured goods worthy of a representative price will once more be purchased in volume, to the detriment of the cheaply priced products.

The government reports, as prepared by the Department of Commerce, have proven of exceptional interest to all plastic paint manufacturers, as well as to producers of calcimine and interior cold water paint. There has been some feeling among several of the members of the committee, however, that this report is not representative of all manufacturers, because of the noticeable discrepancy in volume between those reported by the bureau of census in this report and those reported in the biennial report, copies of which have come to our attention. The committee sincerely hopes that the several manufacturers who are producers of any of the products now being reported in this summary that appears from month to month, will more closely co-operate with the department, to the end that the report shall be intelligent to all of us in a greater percentage of total production than is now the case.

With the rather definitely indicated trend in certain markets toward wallboard of all descriptions, there seems to be an increasing demand for plastic paint of various types so necessarily required for the definite obscurity of joints and cutting irregularities necessary in unit construction of this kind. The committee believes that, as this development progresses, the demand for plastic paint will materially increase. This has been somewhat substantiated by the remodeling and repair volume which has made itself evident to several of the plastic paint manufacturers during the current year.

Shellac

Rudolph Zinsser, Chairman

During the first six months of 1932 the price of shellac, as with almost every other commodity, dropped to unheard of levels, reaching its lowest point during the month of June. From then on it advanced almost 100 percent, only to ease off gradually about half of this gain. Recently the unusually sharp break in sterling exchange has also reacted in favor of the American consumers.

The shellac industry as a whole has made an excellent showing, as far as its importations and consumption are concerned. During the fiscal year of August 1, 1931-July 31, 1932, 387 more packages of shellac were brought in than during the previous twelve months—showing that importations, in spite of the severe depression, more than held their own. The figures are as follows:—

Shipments into the United States last year from India (in packages of 164 pounds each):—

August 1 to December 31, 1931.....	47,969
January 1 to July 51, 1932.....	61,418
Total	109,387

Shipments into the United States the previous year from India:—

August 1 to December 31, 1930.....	37,500
January 1 to July 31, 1931.....	71,500
Total	109,000

Judging by the production figures of the bleached shellac industry for the first nine months of 1932, white shellac consumption has also held up pretty well, and it is estimated that the annual production will probably be within 10 percent of last year's production.

Bleached shellac sales in pounds, therefore, make a very creditable showing, but sales in terms of dollars and profits are another story. At today's low levels, sales in dollars are small, compared with previous years. Due to under-consumption and general lack of business, competition, as in all other lines, has been exceedingly severe. Reduced volume requires higher prices to show a profit, rather than lower prices, and until every industry in the United States succeeds in getting itself on a profitable basis, prosperity, which is based on at least a living profit, cannot return.

Spray Painting

R. A. Guyer, Chairman

The manufacturers of spray painting and finishing equipment are with courage and hard work successfully meeting the problems of these serious times. Their experience differs little, if any, from that of the great majority of well-conducted American manufacturers in the matter of diminished sales and a contracted market. True, retrenchments and economies have been effected, but there has been no relaxation of sales and promotion efforts nor substantial reduction in advertising and publicity. The unprecedented business conditions of the day have brought natural compensations which, perhaps, only such a stress of shrinking income and diminished profits could produce upon industrial life, in greater effort, keener appreciation of opportunities, evaluation of time, and esprit de corps upon the part of personnel in both production and sales fields, also the time and means to plan, to analyze our markets and our lines together with other proper and desirable adjustments in preparation for the returning better days.

Mechanical research and experimentation have been carried on without interruption upon the part of our leading manufacturers; notable improvements have been made and others are under way; the demands of new finishing materials have been provided and our industry is prepared to meet any exigency and to solve any problem of application which the scientific developments of the paint and varnish industry may bring forth, whether in the industrial finishing or property maintenance fields.

An outstanding achievement which must be of unusual concern to every manufacturer and distributor of paint and varnish products, is that our industry has produced and placed at the disposal of the consuming public, at reasonable prices, spraying equipment of such a wide range in size as to be able to meet the painting and decorating requirements of all classes of consumers—from small hand or power sprays for the householder to the larger sizes used in the most gigantic painting operations. These devices are stocked and sold by quite a large number of paint distributors or dealers, but until all such agencies serving the consumer familiarize themselves with the manifold advantages of spraying your products, we believe your industry's progress will be retarded. Much has been learned from this unparalleled economic stress, but nothing more impressive than to avoid waste and to wisely and frugally expend the dollars in our greatly reduced incomes, and this admonition well applies to painting the home and other property as in all other fiscal affairs. It is not only to the owner's advantage to paint with good paint, but also to paint by the most economical means he knows; to do otherwise, obviously, would be false economy and logically unsound. Many thoughtful property owners now do this; and these hard times have caused others in increasing numbers to do so. If, as is often the case, the prices of painting materials are reduced in order to stimulate consumption, imagine the increased consumption which would follow a greatly lowered cost of application by the use of the spray gun! The thought seems worthy of consideration of every manufacturer, jobber and dealer and salseman interested in stimulating the use of paint and varnish products.

In conclusion, we desire to commend the co-operation extended by the National Paint, Oil and Varnish Association and its headquarters staff toward our group and toward our organization—the National Spray Painting and Finishing Association.

Zinc

M. L. Havey, Chairman

During the year 1931, 114,277 net tons of zinc oxide were marketed in the United States, according to the report issued by the United States Department of Commerce. This is approximately 22,000 net tons less than the consumption reported for the year 1930, which is not surprising when we consider the reduced rate at which all industries have been operating.

However, the last six weeks have shown a decided improvement, due in part to the seasonal demand, and the fact that business confidence is gradually being restored.

Inventories are at a low point, and stocks of zinc oxide in the hands of the consuming industries are very small, so that any upward trend in business will immediately reflect an increased demand for this product.

Master Painters

R. H. Oakley, Chairman

Your committee, appointed to attend the convention of the International Society of Master Painters and Decorators, held in Los Angeles, February 9-12, 1932 reports as follows:

Your entire committee attended the convention sessions and was very cordially received, being accorded all courtesies extended to attending delegates.

The convention and your committee were extremely fortunate in the attendance of President W. E. Maston, of the National Paint, Oil and Varnish Association, who delivered a masterful expression of the cordial relations existing between the two associations and further brought out some very good suggestions as to how the National Paint, Oil and Varnish Association could help the members of the International Association of Master Painters and Decorators to increase their business.

Membership

E. L. Gouedy, Chairman

While the past twelve months have been, in many respects, more discouraging than any year in the history of the association, they have brought to us fundamentally sound practices which should make this organization more successful than ever. Unethical competition from outside sources has had the effect of bringing members to the realization that trade association activity is the most effective means of combating malicious practices which are peculiar to all periods of depression.

During the year, two booklets have been released from national headquarters, which have a direct bearing on membership activities. The first of these, "Behind the Scenes," was created for the use of local membership committees in their solicitations for new members. Its purpose was to give briefly the highlights of our association and the advantages the individual member can receive from his affiliation. The second booklet, while not designed for the use of the membership committee, should be extremely helpful to any local club. We refer to the "local club" program, prepared by Chairman Charles J. Caspar and his club program committee. In this was given many worthwhile suggestions for securing new members, and sound principles for increasing the interest of the present membership. No single activity is more effective in increasing membershp than to have meetings so interesting that each member is eager to attend regularly and to discuss his local club with his friends who are not already members.

Activities of your national committee this year have been principally confined to the maintenance of the present membership, it being thought inopportune to make any elaborate membership drive at this time. Comparatively speaking, it is our belief that our association has suffered fewer resignations than have most trade groups. We have received 88 resignations, but having added sixteen new members, we report a net loss of seventy-two members. Nevertheless, the situation is serious, and the support of the entire membership is needed to bring our association roll up to the number deserved by an association with so much to its credit. It is gratifying to learn, however, that practically all of these resignations promise to be of a temporary nature, brought about by economic conditions. Any improvement in general business should react very favorably in bringing these members back into our ranks.

Through the efforts of the southern zone vice-president, F. J. Sampson, the Savannah, Georgia, Club was revived, and its membership is starting out with greatly renewed enthusiasm. Some progress was also made by Mr. Sampson toward the formation of a club in Tampa, Florida, but no definite action has been taken as yet.

Your committee is deeply grateful for the cooperation given us by local committees and the support we have received from individual members. We appeal to the present membership, however, to give more careful study to the Association's need in membership and to support their committees both local and national, in every way.

It should be remembered that the national committee is really of a supplementary nature. The burden of the responsibility must always rest upon the shoulders of the local committees, for it is they who know the true possibilities and the most effective methods of increasing desirable membership in their respective communities. It is our belief, however, that these local clubs can utilize the services of the national committee to a greater extent than they have heretofore. Communications sent from the national group would frequently add weight to the arguments advanced by the local committee, and would indicate to prospective members the sincere attitude with which our national association interests itself in the problems of the individual.

Paint Distributors

W. B. Elwang, Chairman

The vast majority of paint distributors are members of the National Paint, Oil and Varnish Association and through this affiliation feel that they are an integral part of your organization.

It has always been the desire of the paint distributor to co-operate most heartily with the National Paint, Oil and Varnish Association. Especially has that been true during the past year in connection with the simplification program. We believe that this is a forward step in both manufacturing and distributing and we endorse the program which has been adopted.

The position of the distributor in our industry is an important one. Present day conditions emphasize the economic and practical value of the distributor. An ever growing number of manufacturers believe the distributor is the logical channel to work through and have a policy accordingly.

Some of these companies have shown a desire to co-operate more fully with their distributors in the recognition of some of the problems of distribution, such as compensation for services rendered, and in other ways. However, a more universal policy of co-operation is recommended.

There have been times, notably last spring, when price changes have worked immeasurable hardships on both the dealers and distributors; and it is to be hoped that the manufacturers shall in the future give very careful consideration to the matter of distributors' inventory values when a change in the price structure is necessary.

It is also recommended that the manufacturers establish a plan under which unnecessary loss by the distributor may be largely eliminated in the matter of discontinued lines and colors.

It is our suggestion that the manufacturers shall, wherever possible, give the distributors six months notice of their intention to discontinue a color, size or product.

The full co-operation of the manufacturers in the solving of the many problems of distribution is requested; for the closer relationship existing between the manufacturer and the distributor; the more value the distributor will be to the manufacturer and to the industry.

Trade Marks

C. H. Black, Chairman

The work of the trade mark bureau during the past year emphasizes still further the importance of trade mark selection and protection—probably to a greater extent than heretofore. It is becoming increasingly apparent to your committee that the work accomplished and service rendered each year are of inestimable value to members of the association and the industry at large.

One hundred and forty-three reports and registrations have been made to members of the association. When a mark is recorded in the association's bureau it serves as a permanent record for the owner's use of the name and claims thereto. In addition, there is always on file at association headquarters a copy of the label, together with the date claimed for first use. In future years this evidence may be particularly valuable, as in many instances the original information often becomes misplaced. On several occasions the trade mark bureau's records have been called upon to establish the authenticity of this vital information in legal procedure.

During the past year another supplement was issued to the 1927 trade mark book and 1929 supplement. Copies of same were mailed, free of charge, to purchasers of the original publications, thus bringing their trade mark directories up to date. The practical use of these publications is twofold:—First, they serve as a preliminary guide in the selection of a new mark; second, as a ready reference media from which it can be quickly ascertained what manufacturer or concern in the industry uses a particular name. All members of the association should have these books readily available. The cost to members is $3 per set.

Prior to printing the new trade mark supplement, the bureau in Washington sent out a listing blank to the entire industry, urging that concerns place on file (at no charge whatever) trade marks used by them, together with such information as priduct or products used on and date of first use. This data was primarily requested for inclusion in the new sppplement, but obviously the more detailed information of this kind that is available the more efficient service the bureau is able to render.

Through the association Bulletin the trade mark bureau keeps its members informed each month as to marks registered in the bureau, also those passed for registration in the United States Patent Office. This latter service is particularly essential, as opportunity is thus given members of the association to oppose the registration of any trade mark in the patent office which they believe conflicts with a name used by them.

Your trade mark committee this year would like to call attention to the dominion trade mark act, which became effective September 1 in Canada. The basic legal principle underlying trade mark statutes in this country is that of prior use; in other words, the first concern to adopt a trade mark has exclusive use of same, regardless of whether or not it be registered with the United States Patent Office; such rights are based upon what is known as common law usage. This new Canadian act, however, can readily be interpreted as having reversed this long recognized legal principle, and complete protection seems only to be secured by registration. Future litigation may prove that the underlying law will govern, but your committee strongly advises all concerns doing business in Canada, that have built up trade marks through long usage and advertising expenditures, to immediately apply for registration of their trade marks with the Canadian government.

The trade mark bureau, in point of active service, is probably the oldest activity of the National Paint, Oil and Varnish Association, dating back to 1893, when this function of the organization was first inaugurated. Since that time the bureau has revised its procedure from time to time to meet changing conditions, until today it is recognized by other associations and industries as a model of its kind.

Hundreds of inquiries are answered each year and letters or telegrams receive careful attention. Approximately 24,000 trade marks are on file at headquarters and represent the most complete list of names yet compiled in the industry, as they include all U. S. Patent Office registrations. In addition, they list thousands of other trade marks not so registered, but which depend upon their common law rights for protection. A preliminary search is made free of charge, but if a more detailed report is desired a very nominal fee of $1 is made; if the mark reported on is adopted a recording certificate is issued at no additional charge.

Your committee, therefore, desires once again to extend the invitation expressed in previous reports, that member concerns of the association utilize to the fullest extent the information on file at association headquarters.

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Joint Session, Tuesday Afternoon, November 15

National Paint, Oil and Varnish Association and the American Paint and Varnish Manufacturers' Association

(The joint session of the National Paint, Oil and Varnish Association and American Paint and Varnish Manufacturers' Association was convened at 2:15 p. m., November 15, Horace Felton presiding.)

President Felton:—The first speaker of the afternoon is William Zinsser, on the subject "Our Code of Ethics."

Code of Ethics

William Zinsser: — Fellow members, Democrats and those few odd fellows who voted the Republican ticket:—When all is said and done, I ought to be the one unnecessary speaker today because honor and ethics and fair play in business are things that should be born within us and when they are lacking we are not only unfair to ourselves and those we employ, but we are undermining the industry of which we are a part.

So I have chosen as a text, as all preachers must, the title "That a man shall not be without honor within his own industry."

But then I have been told that there is need at this crucial time in business when manufacturer, jobber and dealer are all working in every industry against the greatest economic forces of all time for a little re-emphasis on the square deal in business—a square deal for you calls for a square deal in return from all the rest of us.

In our better moments we must dare to hope that some of the bitter lessons of the last few years must by this time be burned into our very souls. We have all made mistakes, we all in our anxiety to be in the run when this sad race is over, have done thoughtless and selfish things which on second thought and in normal times we would have put behind us.

To me all this footless and hysterical economic struggle will not have been fought in vain if honesty, just plain business honesty, will have a revival of esteem, if the phoney practices, if the dirty deals, if the ridiculous round-about rebates are stopped in their tracks right here and now, before we get so callous and can no longer differentiate between right and wrong.

Blunted Moral Sense

Things got so desparate due to the pinch of the depression that we did things which we did not even recognize as dishonest. So blunted was our moral sense that men told unblushingly of using their positions as directors and officers for buying and selling stocks of their own companies on inside news. Heads of venerable houses with honored histories, sponsored securities which had only been half investigated. Bankers bribed public officials of foreign countries to borrow money those countries did not need and never could repay. When these investments turned sour, was the investor the victim of bad judgment or was it bribery? Things certainly were smelling badly, but everybody's sense of smell was distorted until the depression took the clothes pin off our noses and we began to realize that something had gone wrong and that we all had been worshipping false values.

As soon as we discovered this and the cold truth faced us, down went our hopes, our profits took a nose dive, and down went a large part of our business courage and moral code. Even now, we still seem to believe that there are some magic formulae for extracting a white rabbit from a silk hat. We do realize that the silk hat is in the ash can; that these are the brown derby days; the frills are gone, but the thrills that result from honest work and the kind of industry that made our nation what it is are still very much here. Laws cannot solve the problem. Laws may help us watch men, but laws cannot make men honest. Our only hope of higher standards in the years ahead is that business men have been chastened, that they realize that the circus is over; that we are ashamed of what has happened and the lesson that what is good for you is good for me, is learned all over again.

It's time to take that code of ethics of ours off the wall, dust it off with a feather duster and read it again, and to see that it is respected and not used as a cleak to torpedo the other fellows sitting in the same room with us. We don't want lip service for our code of ehtics in the paint business, but neither should we want applause for our honesty and our adherence to it.

Codes of ethics are not just a lot of hooey enscribed on a beautiful scroll, to be hung on the wall and forgotten. Neither are ethics just something nice to talk about; something for the goody-goody, for the timid soul. Ethics are good business. Honesty, integrity, good business judgment pay not only in the esteem of your competitors, as well as of your customers, but they pay in actual dollars and cents as well.

The Dominance of Fear

To my mind, the largest contributing factor to our present economic dilemma is the complete lack of the guts we once had. Fear of losing an order is a nightmare. If the other fellow can take it, so can we. It costs more to sell less goods, but you all forget that. We have half the demand, the unit selling price is 50 percent below normal, but are we downhearted? No. We are going to make it up in volume, even when there isn't any. So price cutting begins, and you tell me where it will end this side of the poorhouse, which, by the way, has not had a coat of paint in years.

The most self-respecting house, particularly in depression times, makes up its mind that it can lose just as much money as its competitor. That is a lot of clean business fun for a bunch of grown up men throwing away a lot of good money that it took the sweat of years to obtain, and where will that end? That's easy. Let's see what we can do to circumvent that code of ethics.

Here's where we begin to be clever and start some acrobatic tight rope walking. We cannot exchange goods of another manufacturer for our own, but we can buy the other fellow's stock from the dealer we want so badly. There's a nice distinction in ethics, there's a square deal to squeeze out the honest small manufacture. Or we plant the old seed of sympathy with a poor buyer. We tell him, of course, it is nice to have a high priced line for good times, but what's the use of the best in times like these when people are not discriminating and are crazy to buy shoddy stuff. Price is what they want and price becomes your middle name, and the less you say about your quality the better. Here's another gag:—Buy from me. I don't spend any money on advertising, but don't tell him that you are a bootlegger horning in on the co-operative trade advertising of your competitors.

Then if your paint is not so hot, here's a little electric clock that goes free—F-R-E-E—with every twelve gallons of paint. It really should be two cuckoo clocks. A little one for the buyer and a big one for the cuckoo seller.

Or how about a few special terms? Business isn't bad enough, let's see if we cannot slice off a little more for this buyer who is sure to remember all the favors we are doing for him, until the next seller offers more, or until the buyer gets back to sanity and realizes that he has been a sucker and that nobody ever has and nobody ever will last who sells a silver dollar for seventy-five cents. You can paste one thing in your hat, and that is that you get what you pay for, and don't you forget it!

The Golden Rule

There is something in your code of ethics that says something about doing unto others what you want done to you. Well stop doing the others right now. When you are a seller, my how you talk quality. When you are a buyer, what a cheap spectacle you make of yourself to the fellow who is trying to sell you honest merchandise. How you hate the price-cutter when you sell. When you buy, what a price-cutter you become. If half the energy spent on finding a weak link in the chain of sellers was spent by the buyer in strengthening his own structure, weakened by the fear that the sharpshooting of his competitors might win out, when he knows only too well that it can't, *his* troubles and *your* troubles and *our* troubles would be over. A crook never lasts in any line, and I have said again and again that any association loses self-respect and standing if it tolerates a crooked member, regardless of his size, for a minute.

We passed from the golden age into the pipe dream age, and when the dope gave out, we were run so ragged we reached what I like to call the shoddy age—shoddy goods—shoddy merchandising, shoddy morals.

But with it all I am still an optimist. I believe we are coming out. I believe quality is coming back.

Now, in closing, listen to a few sentences from your code of ethics. Are you still listening? If you are, it ought to sound familiar.

"To compete always with fairness and honesty, seeking patronage on merit and service; to refrain from false, derogatory reference, written, oral or printed, to competitors or their products, and from the circulation of harmful rumors regarding such competitors' products or their personal or financial reputation; to strive, by sincere and intelligent co-operation with our competitors, in all lawful ways to increase the efficiency and service to the public of the industry as a whole; to base our advertising exclusively on the merit of our own products.

"To be guided by a spirit of justice, honor and fairness, in all our relations with members of the allied trades, realizing that the standard of ethics maintained in our industry must vitally affect the standard observed in associated industries; to encourage the adoption by the allied trades of similar codes as guides to govern their practices; and to discourage unfair trade practices in those trades, even though such practises might at times be to our own immediate advantage.

"To avoid and actively strive to prevent all forms of commercial bribery or corruption by members of this association and by the industry in general.

"To refrain from the unethical practice of taking in exchange the paints, varnishes or other kindred products of another manufacturer, distributor or dealer."

It should suffice to just read those sentences, just dust them off again, translate them into English. It isn't so involved.

What do you say we have a try at it and see common sense and business ethics triumphant.

We are at a point where we have got to show progress, the country has got to show progress, the industry has got to show progress, and we are going to show progress if we stick to the fundamentals. Someone in this morning's meeting said, did we inherit all those crimes from our forefathers? I don't think we did, and I don't think we are entirely at fault. We were in desperate straits and we thought possibly some new formulae would work, and by this time we have found out what it costs us to sell goods, and we know where we have been led, and all I say to you is to have a try at it, and let us see common sense and business ethics triumphant in 1933.

President Felton's Remarks

President Felton:—It is always stimulating to have Mr. Zinsser review this subject. I wonder if we are all giving the attention that we should to our code of ethics. I wonder if we display the code as much as we might. At our own office we have the code of ethics framed and displayed where callers are received, and many, many times people have called my attention to that and have been impressed with the high ideals with which the paint industry at large is trying to run its business, and I believe we ought to go out of our way to do that whenever we can.

It is not necessary to take any formal action on this matter now.

(The report of the joint committee on interpretation and extension of the code of ethics, composed of Messrs. Felton and Maston, which was distributed to the membership, but not read at the meeting, is as follows.)

Code of Ethics Report

Your committee recognizes no need for any revision of our code of ethics. We do believe, however, that every local club should devote increased thought and effort towards providing its members—particularly new members—with a full understanding of and appreciation for the content of our present code.

It is true that our code is idealistic. But the idealism is practical. We sincerely believe that the answers to many of our most disturbing problems can be found in the simple, straight-forward principles set forth in the code of ethics of our association.

We recommend that the code be read at all paint club meetings in order to keep it constantly before our members.

Mr. Maston Introduced

President Felton:—At this time I would like to say that it is a pleasure to have on the platform with me Mr. Maston, president of the National Paint, Oil and Varnish Association. He has been gracious enough to ask me to preside this afternoon, although this is a joint session between that association and the American Paint and Varnish Manufacturers' Association, and he will, of course, preside tomorrow. I bespeak for him and his association the same attendance and the same interest which you have shown to the sessions of this one.

In our next speaker we have fulfilled a wish which has been with us for a long time. David Lawrence on several occasions stated that he would be glad to address us if the time could be suited to his convenience. We are now about to have that pleasure. The fact that he is a radio speaker of international fame; the fact that he organized and is chairman of the United States Society; the fact that he is a trustee of his alma mater, Princeton; and the fact that he is the founder of the United States Daily are all very interesting and highly elevating, but so far as I am concerned, his greatest fame lies in the fact that he was born in Philadelphia. I have great pleasure, therefore, in introducing at this time, David Lawrence, who will speak to us on "Current Economic Problems." Mr. Lawrence!

Current Economic Problems

David Lawrence:—Gentlemen of the paint industry, I suppose you haven't asked me to come here to talk to you about paint or about the problems of any particular industry, but I am rather glad that you have apparently thought of something outside of your industry, because today more than ever we are obliged to look beyond ourselves in order to get a perspective, and at no time does it seem to me to be more important than now to get a national as well as an international perspective.

We have just come through a period of psychological disturbance, commonly called the presidential campaign, and we are on the threshold of a new period, the trend of which is not yet apparent.

But in order to understand the present, in order to appreciate the future, it would seem to be desirable to get our bearings, to go back just a few years to get to the origin of the present economic situation.

Most of us overlook the most obvious facts about economic problems, possibly because as they recede into distance of years, they seem to be more remote, less vital.

Twenty years ago, in 1912, economists, publicists, statesmen of Europe, were discussing the possibility of a great war, and there was a difference of opinion as to the length of time the conflict, which was then inevitable, would take. It was believed that the war could not be of long duration because of the heavy expense. Opinions differed, as I say, as to the probable length because of the financial strain.

The only difference, I think, between the economists of 1912 and those of 1932 is that we have tried the largest credit experiment in all history and we have found that the war could not be financed. The expenditures of the allied governments and the Central Powers combined—just the expenditures of governments—amounted to approximately $180,000,000,000, to say nothing of the indirect expense and the financial consequences of the war. One hundred and eighty billions of capital, working capital, were drawn from the marts of trade and the channels of commerce; one hundred and eighty billions of dollars of capital destroyed, expended in shot and shell on the Western front, to no constructive purpose. We salvaged virtually nothing out of that enormous expenditure. It resulted, of course, in the greatest political and economic convulsion of all times.

Equilibrium Lost

We tore up the economic map of Europe, we interfered with the channels of trade all over the world, and we have not yet found an equilibrium as a result of that earthquake. We subtracted ten million persons from the world, and fourteen years later we are confronted with the fact that twenty-seven millions are unemployed. Nobody can say, therefore, that the economic disturbance we are now suffering from is a local affair; nobody can say truthfully that it has its origin in any particular country; it has its origin in the complete disturbance of economic equilibrium in 1914.

We have found repercussions in this country so severe as to be baffling. We have not known how to deal with this fundamental upheaval. Much of the indecision, much of the apparent wavering, much of the doubt of 1930 and the early part of 1931 may be attributed to the conflict of opinion among ourselves as to what constituted the proper economic policy for this country.

There were two schools of thought applying their conflicting pressures to government. These schools of thought reflecting the views of spokesmen of various kinds, but all coming down to fundamental principles: one school of thought, the school of natural law, the other the school of artificial control, the school of natural law believing that the first thing to do was to cut wages, diminish overhead, foreclose equities right and left, deflate to the extreme, let the unemployed shift for themselves, a sort of survival of the fittest, wait for the patient to convalesce.

That is irrefutable logic, we cannot quarrel with it, except that it does not take into account, in the last analysis, the preservation of the social order, with ten million persons hungry.

The other extreme, the school of artificial control, through one suggestion or proposal or another, through very respected channels of opinion, too, insisting that the way out was to borow money, to take care of expenses during the depression, to build public works, whether they were needed or not, to pay bonuses, whether they were due or not, to issue flat money, to tinker with the gold standard, to reorganize industrial units, with some form of governmental regulation, to redistribute wealth by confiscatory taxes, all of which presupposed a plastic capitalism that could be, over night, suddenly molded easily by mere governmental mandate.

Trying for a Solution

Somewhere between those two extremes we were finally compelled to decide. And what was finally done may be called emergency policy because it does not conform to any rule of experience. It breaks precedent as well as tradition.

I believe that that decision to adopt emergency policies came in October, 1931, a little more than a year ago. It involved a mobilization, involuntary mobilization, of credit through what was then called the National Credit Corporation. The bank directors in this country did not sit acquiescent as it was proposed that they should subscribe for debentures of the National Credit Corporation with two percent of their deposits, but it was decided, in the national interest, to conform to the principle of emergency action, and later on in the winter months we saw the establishment of the Reconstruction Finance Corporation, and later the Glass-Steigel law and the Federal home loan law and the extension of agricultural credits, an activity which many of us looked upon askance, activities which seemed to be inconsistent with many of the protestations of our leaders with reference to the extension of government in business, but all of which were made necessary by the acuteness of the disturbance and by the greatness of the distress.

What was done in those months was a mobilization of existing agencies in the hope that through those series of steps we might re-establish confidence. Because, if you will turn your memories back to October, 1931, you will recall immediately the invisible enemy who came upon our structure of economic confidence and tore it down—the flight of the dollar abroad. The hoarding of the dollar within our own borders became so extensive that had it continued it would have resulted in a complete collapse of our financial structure. It was necessary to rebuild public confidence.

Many of the legislative steps taken were of a negative character, in the sense that they sought to heal the wounds, they sought to stop the bleeding. The government was unable to propose anything affirmative, to build pay rolls, to bring receipts to industry. All government was able to do in that period was to restrain the flow of blood, because the bank failures in this country every week showed a staggering total.

We knew that nothing could be done to build up confidence until those negative steps had been effectively applied.

First Co-ordinating Action

And so, through the early part of 1932, past the adjournment of Congress, to the summer months, we came in an effort to coordinate government action. Then, finally, this onward psychology was interrupted by a political campaign for which the majority parties had been preparing for more than two years, no single step, no step of any importance taken by either party except with an eye to the election just closed this month.

So, it was necessary for us to put that milestone behind us in order to see clearly into the future, in order to make substantial progress toward the rebuilding of public confidence.

In retrospect, looking back over the last few months, we cannot deny that the public has been given the impression that the government is responsible for the economic welfare of the individual, to my mind a very dangerous philosophy if carried literally, as it has frequently been interpreted.

The government is an important force, it is an influential force in economic recovery, but it is not the controlling force, nor is it the decisive force it is sometimes reputed to be.

We cannot deny, of course, that government is essential to prevent oppression and economic disturbance, but the policies adopted by the government depend upon intelligent personnel and sound law making, as well as the active co-operation of business and economic forces themselves.

We are confronted with many economic problems that have a governmetal aspect:—the war debts being discussed this week, the possibility of revising tariffs, the arrangement of our fiscal policy involving, as it does, a distribution of the tax burden, the possible revision of anti-trust laws, and various proposals to regulate the extension of credit. All of these are questions of economic aspect. They depend in their last analysis upon the viewpoint of business.

We have, for many years been building up an export trade. Our domestic consumption has been ninety percent of our total output. We have been sending ten percent to the rest of the world. Among the affirmative steps now being suggested for the upbuilding of business is one that we shall again find markets for our export surplus. To me, it is a choice between going back to the standards of the nineties, the standards of living of those years, and trying to exist wholly on a domestic market, or else reaching out to other parts of the wor'd.

Certainly, there is merit in the view that a state like Pennsylvania, which came only recently here to ask for $30,000,000 for relief, would be better off if it had $150,000,000 of export business in 1932, which it had back in 1928. We cannot indefinitely support the theory that by relief funds we will take care of the unemployed. There must be affirmative action to bring economic recovery.

What About Recovery?

How shall we achieve economic recovery? Certainly governments are not responsible for that objective, but they can assist through duties that are clear. Many of the questions which have a governmental aspect are problems in public opinion, as much as they are problems in economics.

For instance, all democracies are held back by slow-moving public opinion. For a generation we have preached the doctrine of economic nationalism. We have exorted our people to believe that within the borders of this country lie their salvation complete. We know now that either the world is troubled by over-production, or that it is suffering from underconsumption I prefer to believe in the latter doctrine. I say that because all over the world there are human wants unsatisfied. There is just as much demand for transportation in Sumatra and Java, Capetown and other parts of the world today as there were demands for the same thing five years ago. We, perhaps, have not mechanized sufficiently to produce, in volume, for the export trade. Perhaps we have not given due consideration to the factors abroad which prevent the rest of the world from achieving an economic equilibrium.

I mentioned, in the early part of this talk, the enormous debt saddled upon us by the war, not merely inter-governmental debts, but private debts as well, and each nation, just like an individual, has been struggling to earn a surplus over and above expenses, to amortize the $180,000,000,000 or more of debt, to pay interest, let alone sinking fund on that great debt. The world has found it impossible to pay that debt within a single generation and it faces now the choice of spreading that debt over a longer period of years, or scaling it down, but basically it faces the problem of restoring the purchasing power of the world, just as we face, in this country, the problem of restoring the purchasing power of the individual, and it is no different whether we look at it from the perspective of an individual or a nation; there can be no restoration of purchasing power to the individual except by economic recovery involving re-employment of the millions who are now unemployed. There can be no restoration, so far as other nations are concerned, until their financial structures have been supported, bolstered up, and helped by those who have the means in this world.

[This country exported something like six billion dollars of capital between 1923 and 1928. Had it not been for that vision, had it not been for our readiness to export capital in that period, we certainly would have faced the catastrophe much sooner.]

Conflict of National Policies

1921 would have been the signal for the avalanche. As it was, we were enlightened sufficiently to support the world economic structure, and now we are given the opportunity once more to bring back some kind of an economic equilibrium abroad. I am not speaking merely of the intergovernmental debts. They are a mere incident in the great task of international co-operation, because we have gone on, not only this country, but France and Britain and others, developing national policies which are in conflict with the idea of international co-operation. and we are going to be compelled in the year just ahead of us to decide between dangerous economic isolation and enlightened economic co-operation with the rest of the world. These questions may seem abstract to you—they may seem to be in the dim distance. Unfortunately they are concrete at this very moment. It is difficult for anyone who talks to you about the governmental policy to divorce his mind from the fact that at this moment we are in a transition period between an old and a new administration, but I think it is very fortunate that we have passed the election, because now the only things that count are facts, not political objectives.

It will be another four years before we will have another presidential campaign, and between now and then there must be economic recovery, substantial economic recovery, or neither of the major political parties will be a factor four years from today. And so the job ahead is one of disinterestedness, it is a job which both parties will begin to realize the importance of as the weeks go by.

Those of us who live here in Washington and see government at first hand year in and year out, are not very much elated over changes in government unless we see fundamental changes in policy that mean the economic betterment of our country. We are not concerned with the political fortunes of individuals. They are of secondary importance. What we really want to know is whether, by united action of both these parties, we can go through this crisis, because it is a test in representative government.

The political future of any individual or any political party doesn't really matter. And to the extent that that view is borne in from the outside to the people of responsibility here, to that extent will we begin to see a leadership of public opinion in this country which will assist us in doing our part with the rest of the world.

I think the immediate future involves a crisis for business such as it has never before witnessed. All sorts of experiments are being suggested, all sorts of efforts being made to tear down the traditional American system, which not merely aims to protect the individual, but aims to stimulate incentive, so that the individual may reap the fruit of his toil.

Who Will Do the Guiding

What part will business men play in this recovery period just ahead of us? Can they afford not to take part? Will they sit supine and turn over the control, the leadership in this period, to the experimentalism of a few enthusiasts, or will they turn it over to the common sense of sobered men who have been through the crucible of this great experience and who see the need for a balance and a natural adjustment, not merely between the elements in our own country but the elements of the whole world.

Shall we approach the future with bitterness in our hearts or with patience? There will be irritations in this transition period, this reconstruction era. There will be plenty of passion exhibited. It is a time for poise and sanity and steadiness. Above all, it is a time for penetration. We are unfortunately a people who accept slogans. We are quite superficial about public affairs. Somebody comes along and gives us a slogan such as "balancing the budget." and we are for it just as we are for virtue.

When it comes to examining what is meant by the balancing of a budget, we suddenly discover that it is something more than reducing governmental expenditures. It is finding an effective way to bring income into the treasury. A budget has two sides, as you all so well know. Balancing a government budget means not merely reducing expenses. It means finding a tax system that is equitable, a tax system that is productive.

Had we made all the economies ever suggested by anybody in the last two or three years, we still would have been faced with a deficit in the income of the Federal Government because the shrinkage in income was so great we took in less than 50 percent of our budget.

We are going to be confronted with a fiscal problem in balancing the budget once more in December because the last budget was not balanced.

We have depended on the income tax, the graduated income tax, as a means of getting the necessary revenue to balance a budget. We see now as the weeks shows the record of receipts, we cannot depend upon the income tax any more than our cities can depend upon the real estate tax. There must be an equitable distribution of the tax burden, a broader base of taxation, if we are going to be able to collect sufficient revenue to balance the budgets of the federal goverenment, the state governments, or the city governments, and it does us little good to prate about the rising cost of government, when all we are doing is dividing the same expense of government into a diminishing national income. The thing we must find is a way to increase our national income, and a way to meet the necessary expenses of government by a proper system of taxation.

The campaign orators may promise you a billion dollars cut off the normal budget of four billion, but this is, after all, a political government, this is after all a government dominated by organized minorities through the Congress. These organized minorities will prevent the reduction by anything like a billion dollars of the federal budget, and it is well for us to face these facts, to know the truth, rather than to raise our hopes and belief that through some magic wand in Washington taxation can be reduced, the burden can be reduced. The burden can be better distributed. It cannot be materially reduced unless you are going to change human nature. Why don't we face the facts?

Within the last two years, we have seen demands from organized minorities not to cut their expenditures, but to increase their expenditures. We will be lucky indeed if we hold the expenditures somewhere near the point at which they were two or three years ago before the extra expenditures of government, the depression expenditures began to accumulate.

We forget that much of the increased expense in government is directly due to the depression, to the desire of the government to furnish employment, through the demands of regions, cities and states all over this country for federal money to assist in keeping people at work.

Greatest Confusion Passed

I have the greatest confidence that the period through which we have already passed represents the period of greatest confusion and that the thing which characterizes the present era, indistinct as it may be, is a certain unity of purpose, a certain clarity of vision, which will assist the economic recovery that truly began early this year, that truly began this summer, with the sudden but nevertheless definite rise in comodity prices. Had it not been for the interruption of the campaign, I think we would have been much farther ahead than we are today in organizing the recovery of this country.

And by the same token, as soon as we clearly get rid of the indecisions which the campaign brought, we will be able to make substantial progress.

Of course, it all depends on what is the objective. The words "economic recovery" seem to imply the millennium to many people. To others they imply a satisfying existence. Some people talk even now of going back to 1929, as if 1929 typified anything really satisfactory in American life. Wasn't it a year typical of a decade of debauchery in America? Wasn't it a year that typified a decade of extravangance, of broken ethics in almost every business and every single profession, a period of public and private indulgence unparalleled, a period of preoccupation in which every individual was interested in himself, very little thought of his neighbor? It was true of nations, a sort of irresponsible individualism on the one hand and an irresponsible nationalism on the other.

And so as we look forward to the future, we cannot overlook the fact that a change is coming; it has already taken effect with many people, and with some nations. A new spirit has come. It has come out of the suffering of human beings. It has come through the relief work. It has come through the observation that we have been able to make of the pain of others. We have observed our neighbors and we have begun to tolerate others, the rights of others. We have begun to have more respect for the property of others. There has been, on the whole, a regeneration in part of the human spirit. It is a change that comes gradually, imperceptibly to be sure, but it comes in periods of great distress and human suffering. We are coming to an era of responsible individualism as well as responsible nationalism. Sometimes I wonder if that isn't the true meaning of this depression, that the Lord moves in strange ways his wonders to perform.

(The audience arose and applauded)—

President Felton:—I am sure you have all been very much impressed by this illuminating and inspiring address of Mr. Lawrence.

Our next item of business is the presentation of the report of the educational bureau. Before I call on Mr. Trigg to conduct this part of our program, I would like to say just a word regarding him. He is a man who has suggested to me many ways in which it would be possible for me to be of service to the industry and although I have proved many times a dull tool with which to work, yet he has had confidence in me just the same, and this is the first opportunity I think I have had to present him, so I do so with a great deal of pleasure and call on my friend and fellow townsman, Ernest T. Trigg.

Educational Bureau

Ernest T. Trigg:—Before I take up the subject of the educational bureau, I would like to ask if Dr. Gardner is in the room?

Dr. Gardner:—Right here.

Mr. Trigg:—Would you mind coming up here just a minute, Harry?

Tribute to Dr. Gardner

Mr. Trigg:—Back in the Summer of 1907, the educational bureau which was then known as the bureau of promotion and development, at the suggestion of one of its members, now deceased, Robert S. Perry, decided they would establish a department or division of the work known as the scientific section. And so Bob Perry, as we all affectionately knew him, was put in charge of the scientific section, and he took the work down to the laboratories of his own business, Harrison Brothers, in those days, in Philadelphia. In November of that year, twenty-five years ago this month, he brought a young man into the laboratory as an assistant to develop him in this particular business. That young man was the man that we refer to today as we know and have associated with us, Dr. Henry A. Gardner. From that very small beginning, Dr. Gardner has worked his way forward in the affairs of this industry from a technical standpoint, to a place where he is recognized today as the outstanding technical authority in the paint and varnish industry in the United States, if not in the world.

During the twenty-five years that Dr. Gardner has served this industry in that way, he has built up just naturally because of his own nature and character, the strongest kind of friendship throughout the industry and with the members of it, and so today, men, the educational bureau through its chairman want to make this public sort of acknowledgement to you, Dr. Gardner, of our appreciation of you, of the work which you have done, and the prestige you have brought to this great industry because of your character, because of the quality and the fineness of all of your activities and your accomplishments. You have helped the industry, Dr. Gardner, to lift itself up from the levels that existed twenty-five years ago; you have helped us to do this job which we have tried to work out from the inside, rather than to have agencies from the outside come in and do it for us. You have assisted us to put this industry onto a basis where I believe today, looking at it as an industry as a whole, it is under at least as careful and definite technical control in the things that it is doing from the standpoint of production as any industry that there is.

And so, Dr. Gardner, the educational bureau, merely to indicate or hand to you something which might be a physical expression of feeling, are presenting you with this little token in the shape of a briefcase, which you may find of some comfort and convenience in your travels, and ask you to make use of it, which we hope you will do. Your friends in the educational bureau and your friends throughout the industry I am sure will join with me in saying that when you do make use of it, you will find it constantly lined with the finest kind of respect and admiration and love for you, Harry. Congratulations!

Dr. Gardner:—Mr. Chairman and Mr. Trigg, I certainly appreciate this very greatly and I know it is going to be lined with the friendship of all of you who are here. Thank you very much!

Mr. Trigg:—The Educational Bureau report so far as the chairman is concerned is going to be very brief. All the report I am going to make is that the attendance of the members on your educational bureau still continues to be of the highest order. Our record for the last year has been 98 percent attendance, figuring on all of our meetings.

As you know, the work of the educational bureau is being carried on by various groups, such as the scientific section, the unfair competition bureau, and so forth, and so if the president will be good enough to take over the calling upon the various men who will respond as per your program, and if you will be good enough to call on Mr. Patton first, I will appreciate it very much.

President Felton:—We are making a slight change in the program as listed in the printed program, and I will now call on Ludington Patton to present the report of the Unfair Competition Bureau.

Unfair Competition

Mr. Patton:—You will find the report of the unfair competition committee in the printed report, and I am not going to take the time to read that report. I do, however, want to pay my respects to the unfair competition bureau personnel, headed up by Mr. McFadden and Mr. Macdonald, and an assistant. During the past year they have operated very efficiently and very successfully with a very greatly reduced budget, have taken cuts in their salaries and yet the morale of the unfair competition bureau has not been effected at all.

I just want to explain to those who perhaps are unfamiliar with the setup of the unfair competition committee and the unfair competition bureau, the unfair competition committee is responsible for the personnel of the unfair competition bureau. They formulate the policies to be carried out by the unfair competition bureau, which policies are approved by the educational bureau before they are adopted. So far as the unfair competition committee is concerned, they know nothing of the detail being carried on by the unfair competition bureau. They know of no complaints that the unfair competition bureau may be investigating. Until the entire industry is advised either through release of complaints by the Federal Trade Commission or other publicity, the members of the committee are not familiar with what is going on.

I want to say in that connection that the more the industry uses the unfair competition bureau, the greater results the industry is going to have from its work in removing unfair business practices and bringing to their attention anything that is of unbusinesslike procedure.

I want to say, further, that any of you who take matters to the unfair competition bureau, they are treated just as confidentially as if you took them to your own attorney, and these two men, Mr. McFadden and Mr. Macdonald, are scrupulously careful that no one knows where the information comes from and that you can have absolute confidence in the way they will handle it.

Mr. Chairman, if you will call on Mr. McFadden and Mr. Macdonald, they would like to give the convention a little of the detail of their operations.

President Felton:—I see Mr. McFadden is in the room. I will call on him to address you at this time.

Mr. McFadden's Remarks

Mr. McFadden: I have no formal report to make, because, first, you are so pressed for time that we merely want to put in an appearance to show you that we are here and invite you to come and see us and promise that we will come and see you; and, second, because I think you understand pretty well what the general policy and procedure of the bureau is, and we are carrying on in the same way, it won't be necessary for me to repeat.

I will say in elaboration on Mr. Patton's suggestion that more use be made of the bureau, that doesn't necessarily mean that we try to find more sources of complaint and bring more cases, but if there are any questions that you would like to have some consultation about, we will be glad to give you our best impressions and any references that we can furnish to pertinent material that will help you to decide about your own practices or about recommendations that you may have for the good of the association.

The bureau's annual report has been printed and distributed. I think all of you have had a copy by mail. If by chance any of you have been missed, we will be glad to furnish copies.

Without going into too much detail about what is contained in this report, I do want to call particular attention to the fact that the proceeding against the Gilbert Spruance Company has been dismissed. When I spoke of this as a pending case last year, to read my remarks at that time, I said: "I want to pause just a minute to remind you that these are pending cases. That means that the parties to these cases still have their day in court. We must all suspend judgment as to the final verdict until they have had that hearing."

The Gilbert Spruance Company has had a hearing. The question has been exhaustively discussed, and the Federal Trade Commission announces its final verdict in these words: "This proceeding having been heard by the Federal Trade

Commission upon the complaint of the commission, the answer of the respondent, the testimony taken, and the briefs filed herein and argument of counsel for the commission and respondent and the commission being now fully advised in the premises, it is ordered that the complaint herein be and the same hereby is dismissed."

Fair Uses of Publicity

I insist on that because sometimes these cases are a little more dramatic than others, and the first notice of them wins a wider attention than the follow-up, and I want to assure you that we are giving as wide publicity to this result, and we are glad to do it, as we did to the original complaint.

As to our cases in general, the unfair competition bureau, of course, has never in any way implied any opinion as to the merits of any case, and so the data that we submit to you is almost invariably verbatim copies of official documents. Bear that in mind when you read our notices of other pending cases.

There is another case that I think I ought to call attention to. Very soon, there will be a hearing to determine whether or not the Hoboken White Lead & Color Works have ignored the order of the United States Circuit Court of Appeals for the Second Circuit. My reason for calling attention to that is we are operating under the function for which we were established, to co-operate with government officials. In order to assure the preservation of fair competition, we keep matters under observation and if it is necessary to inquire into the subsequent conduct, we follow through.

Perhaps the next dramatic thing to refer to during the past year is the fact that we co-operated with the state officials in Virginia to find out whether or not there had been a violation of the Criminal Law of Virginia, which penalizes comercial bribery. As a result of an indictment, and after a long effort to bring the parties subject to it within the confidence of the court's jurisdiction, Mark L. Jones, former salesman of a varnish company, pleaded guilty to this indictment, containing eleven counts, in which the bribes were specified as ranging from $65 to $454, and totaling $3,6 7. You have received notice of the result of that case. I call attention to it because it is the first time that one of the state laws was applied within our industry.

Lest we lend too much emphasis to this side of our work, we certainly do not want to be guilty of a campaign of fear. I want to remind you that the work of the Unfair Competition Bureau is much broader than assisting officials in bringing cases up. We are also the legal office of the association and try our best to give legal advice to you on the various questions that come up in the general conduct of our association work, and I might refer to the straits that some other associations are now in, which points to the need for very careful consideration of the legal limits to association action.

Limits to Association Action

There was a decree entered into in April, 1932, in the case of the United States against Corn Derivatives Institute. To quote the petition, "The conspiracy was made effective by agreements to sell only on a so-called basic point system." That was the gist of that case. In the Sugar Institute case the charge was that they had abolished all discounts and had agreed upon uniform freight charges. In the Asphalt Shingle and Roofing Institute case they had agreements in regard to uniform maximum discounts and freight equalization agreements. This summer I took a motorman's holiday and went down to Asheville, North Carolina, to attend the trial of the Appalachian Coals, Inc. The coal industry is one of the hardest hit economically. They were struggling for a way out. They decided upon a common selling agency.

The Department of Justice immediately brought injunction proceedings. A special court of three judges was assigned to sit and expedite the matter. Colonel Donovan was counsel for the defense, but the result was a three to nothing decision by the court in favor of the government. The injunction has been granted. That organization will appeal, and that case, which is looked to as a key decision in anti-trust law, will come up in December before the United States Supreme Court.

I mention the activity of the Department of Justice not to give the impression that they are crusading against trade associations, but there is enough activity of that sort to cause us to consider very carefully the legal aspects of the various things that we do.

Now, the only other thing that I want to mention is the co-operation with better business bureaus. As you know, the better business bureaus are an outgrowth of the so-called vigilance committee of the advertising clubs. They now have bureaus in fifty different cities and they are very well equipped and many of them are very efficient in handling local matters, most particularly in regard to false advertising. We have had active contacts with many of these bureaus and have had the privilege of working with them. Your manager serves on a committee of the affiliated better business bureaus to help to codify some of the advertising practices, and lest there be any doubt as to our relations with the bureaus, we have advised the local paint clubs that in our opinion they should get acquainted with their local better business bureaus who are active in their community so that they will know what the bureaus are doing and be able to give them the benefit of their advice.

Now, in closing, I just want to pay a very sincere tribute of thanks to our committee, which has guided us with great tolerance at times and also a tribute of appreciation to Mr. Horgan, and the other members of the staff who have made it so easy for us to carry on in a more or less difficult and independent program, and the last word that I want to say is Thank God for M. Q. Macdonald!

President Felton:—Mr. Macdonald, have you a report to offer at this time?

Mr. Macdonald's Report

Mr. Macdonald:—I will try to dispose of four interrelated topics in five minutes. They are co-operation of the bureau with the local paint clubs, dollar a gallon paint sales, the co-operation of the paint clubs and of our bureau with the better business bureaus, and the so-called "Toledo experiment."

The paint market in several cities has suffered severely from heavily advertised sales of paint at a dollar a gallon. In one or two instances, it was advertised as factory surplus selling much below the regular price. That is one example—newspaper advertising, hand bills, big signs, and big sales.

This statement to the effect that it was factory surplus selling much below the regular price was true in part, but the paint answering that description was replaced and supplemented from time to time by new stock made to sell at a profit at a dollar a gallon.

These sales resulted in sale of thousands of gallons of paint during the last fall painting season. Cheap paint, as such, is, of course, a lawful article of commerce. Every industry producing high-grade goods suffers at times from the competition of low-priced and of low quality goods. All that can be demanded is that neither the manufacturer nor the retailer must misrepresent the goods; in the instances referred to, some of the paint was labeled and advertised as linseed oil paint. Samples were taken which disclosed approximately 47½ percent pigment and 52½ percent vehicle, and that vehicle contained about 66 percent of water, and this was described as linseed oil paint.

These goods apparently were not uniform, for another sample disclosed pigment and vehicle about fifty-fifty, with about 52 percent water, and another sample apparently from the same source disclosed 57 percent of vehicle of which about 66 percent was water.

Again, a product labeled white lead was offered in connection with these paint sales. It was examined and found to be entirely innocent of white lead.

Now this was in Ohio where the paint law merely requires that paint shall not be so labeled as to tend to deceive the purchaser as to its nature or composition. Ohio does not require the formula label that is so objectionable to many manufacturers. The better business bureaus co-operated with the members of paint clubs in Ohio in correcting certain features of local advertising. They co-operated with our bureau in locating samples and in gathering information from other better business bureaus. They furnished helpful introductions to state officials and co-operated as fully as their somewhat limited jurisdiction permits.

Their introductions to state officials were very helpful. Those officials made an independent survey. They bought their own samples and sent them to the state laboratories just about one day behind our own reports.

Similar information and similar unbroken samples were submitted to the federal authorities as interstate commerce in these cases was very clearly involved.

As these sales occurred in temporary stores, opened for that purpose during the painting season, without carrying the overhead of the dull season, their operations were technically distressing to established dealers in those cities.

Toledo Adopts Experimental Law

The council of the city of Toledo recently attempted to meet this situation by a rather interesting local ordinance. It is frankly an experiment and has not yet been contested, although it has been effectually applied to a temporary paint dealer a month or so ago.

Briefly, it provides that every person operating a temporary store shall pay an occupation tax of $150, which sum shall be refunded in three months if the store is then in operation. The opening of such a store without the payment of this tax is punishable by a fine of from $100 to $300 per day. Of course, the sale of goods by sample only is exempted, together with the sales of agricultural produce to accommodate the farmer markets.

Some of our paint clubs are already interested in the Toledo experiment and are considering it as one method of combatting the temporary store evil.

I emphasize one method for, of course, no single method will answer all purposes any more than one tool would serve to build a house.

Copies of the Toledo ordinance will, of course, be gladly furnished to any clubs that are interested.

Unfair Competition Report

The report of the committee on unfair competition, Ludington Patton, chairman, distributed in printed form to members of both associations, but not read, is as follows:—

In submitting this annual report to the 1932 convention of the American Paint and Varnish Manufacturers' Association, Inc., your committee is pleased to record the signal recognition that was accorded this year to all who have cooperated in our program of self-regulation.

On April 5, 1932 our association, and through it the organized industry as a whole, received the award which is annually conferred by the American Trade Association Executives "as a means of insuring recognition for outstanding service rendered by a trade association to the industry it represents, to industry generally, and the American Public." In making the presentation, the Honorable Robert P. Lamont, then Secretary of Commerce, speaking as chairman of the jury of award, had this to say:—

"First place is awarded the American Paint and Varnish Manufacturers' Association for two reasons. First, they carried through a program which was comprehensive, well coordinated and effective in the interest both of the public and of the industry. Second, the voluntary agreement under which they set up and successfully operated an unfair competition bureau is a conspicuous tribute to their courage and initiative. This bureau, established in 1917, has now had a good test, and on the record has been remarkably successful. To my mind it represents an outstanding attempt at self-discipline, and as such affords striking evidence of industry's ability to regulate itself in its own and the public interest. In its provisions first for non-governmental arbitration and finally, if that fails, for submission to the Federal Trade Commission it is sound in conception and effective in practice. Here is an industry which is organized on the principle that its own interests are best served by protecting the public against the unfair and unethical practices of the few. Such enlightened and courageous action deserves recognition."

In quoting the terms of this award as a part of its official record your committee desires to avoid any misunderstanding of its significance. Fundamentally it is a tribute to all of the cooperative activities of our associations, comprising a comprehensive and effective program of wide service. But it is more than a tribute: it is a challenge to every member of our industry to justify the role of leadership.

However, the official statement about the nature of the industry's "attempt at self-discipline" is the most apt description that could be made of the relation that exists between the program itself and the machinery which has been set up to carry it out.

The award properly emphasizes the achievement of the industry itself in combating unfair competitive practices. As to the unfair competition bureau its "record has been remarkably successful" because it has had genuine cooperation from the industry at large.

To keep that bureau advised of the industry point of view, your unfair competition committee advises and consults with it on matters of general policy and personnel. The other function of your committee is to approve a budget for the operation of their unfair competition bureau, and to submit recommendations to the Budget and Finance Committee of the Educational Bureau.

It cannot be stressed too often that your committee does not participate in the pending work of the unfair competition bureau. That Bureau is a legal office which preserves the traditional relation of confidence between attorneys and clients. Its files are not open to the inspection of anyone other than the staff of the Bureau itself. Consequently, the reports which that bureau makes to your committee about its specific activities are made only after public release of such information. Because of the distinction between the functions of your committee and those of the bureau, the annual report of the latter is printed elsewhere.

M. Q. Macdonald and T. J. McFadden constitute the personnel of the unfair competition bureau. Mr. Macdonald, the advisory counsel, is a member of the bar of the District of Columbia and of the United States Supreme Court. He was formerly a member of the board of review in the Federal Trade Commission. Mr. McFadden, a member of the New York bar, was formerly a special assistant to the attorney general. In addition to their services in checking unfair competition, the members of the bureau render general legal service to our associations.

At the time of our last annual report the staff of the bureau included two special representatives—Pryor M. Lorraine and John R. Farrell. While the conscientious work of these two gentlemen was of great benefit to the bureau, the necessity for a drastic revision of the budget required the termination of their services.

Nevertheless, despite the curtailment of its facilities, the unfair competition bureau is continuing to render effective service.

In presenting this report your committee feels that it is appropriate to point out that the matters about which it consults with the bureau fall within a clearly defined jurisdiction. Private controversies do not fall within this jurisdiction. Nor do any matters about which there can be no question of unfair competition. Furthermore, the term "unfair competition" is interpreted in its strictly legal meaning. As to other destructive practices which do not constitute "unfair methods of competion" from the strictly legal point of view, it may be possible and appropriate for our association to deal with some of these, but your committee does not believe them to fall within its scope.

Finally, your committee urges that there be no cessation of the wide and active co-operation which has achieved a marked and recognized prevalence of fair competition within our industry. Reconstruction days are ahead. The renewed vigor of all in a hopeful business struggle may be conductive to some hasty, ill-considered, and even ruthless action. We are entering upon a time when it is vital to preserve the gains we have made toward better business practices.

President Felton:—That concludes the report of the unfair competition committee. Are there any questions you would like to ask either Mr. McFadden or Mr. Macdonald?

Discussion by Mr. Callahan

P. H. Callahan:—There is no question I would like to ask, but I don't think that this very important movement within this industry should be passed upon without some comment. I had a great deal to do with the initiation and during the past year I have had a great deal of personal experience that is somewhat valuable. I thought of the example set forth by Mr. Thorpe's friend in Fox River. I went out to see the trade myself to see what were the conditions, and have been doing so largely this year. I have been north and south in this territory referred to as North Carolina.

I hadn't been doing that work, perhaps, for about ten years. I was accused of minding other people's business and regulating their tastes, and things like that, but I went back to business and I find there has been a great improvement in this subject that we hesitate to approach, namely, commercial bribery, and I might answer one of the gentlemen that asked this morning, did we inherit some of these vices? In that connection I should advise all of the people in the industry that we imported that vice. That originated in England and on the continent, long before any of us were in business. We not only inherited, but we imported it originally.

If this bureau can go through this depression and last for another year, with the conditions existing among the foremen and the workers, it is bound to succeed and have a hundred percent perfection eventually.

I know of no foreman now who is getting fifty percent of the wages that he got in 1929. That alone forms a great temptation. Furthermore, they are not getting even full time at a reduced wage. Some of them have been very much up against it, and the temptation is very ripe. But I have seen not less than a score of foremen and talked to them, mostly with the knowledge of their employers, and they approach this subject entirely differently than fifteen or twenty years ago, when it was a cold matter of dollars and cents. It is possible now to talk honesty, to talk virtue and things of that kind, so you can teach them to be honest and look you in the eye. That didn't prevail except as an exception now and then twenty years ago. I have always maintained I was no better nor no worse than my competitors.

Cleaning Out Corruption

In certain lines of industry this thing has been cleaned out completely. I would say the railroad business is washed out absolutely clean. There is not much railroad business, though, any more. Other lines of industry have been cleaned and washed out completely, but it cannot be claimed that the furniture industry has been cleaned out completely any more than it is correct to say that they are all crooked. There has been a wonderful improvement. The people, when they are hard up, when they are confronted with present stuations, are apt to be tempted or yield themselves to temptation.

We have a condition among these men that we have been watching and helping and straightening out that didn't exist before. But this bureau has accomplished wonders in developing a morale among factory foremen that never before existed. I am not prepared to say it is all clean. It may be a long while before that is so, but there is a decided improvement in talking with foreman now as compared with what it was when I traveled generally. The condition is getting better, I think. If we had this recovery that we are hearing so much about, if that was here, I think all these men would be satisfied if they got those wages back, and they would be as pure as Ivory soap, I think.

Now this is a new initiative movement which no other industry tackled. Sometimes I wanted to ask Mr. Macdonald what the printing ink people did, what the automobile people did, all of whom he ranged in 1918 as worse than our industry. At least we have made that much headway. I can testify to that from my personal experience in the past year, that you see men who now talk honesty to you and you are able to talk to them and look them in the eye, and if this distress disappeared, I think this thing would be almost eliminated by this time.

President Felton:—Colonel Callahan, your interest in commercial bribery is manifested in your willingness year after year to speak on the convention floor. I am sure it must be refreshing to those who have heard you year after year to know that by your personal observation conditions have materially improved. We thank you for that comment.

Is there any further comment? If not, I think a motion to approve it would be in order.

(It was voted to approve the report.)

President Felton:—Now we are ready at this time for a report of the scentific section under Dr. Gardner.

Scientific Section

Dr. H. A. Gardner:—I have a rather graphic presentation that won't take very long. It is in the form of lantern slides, 50. With your permission we will start right in.

The first subject I wish to speak about is linseed oil. They have struggled for years to get an early crop of wilt-resistant and the bison seed is the one with the large variety of high oil content and low iodine value, meaning a low oxygen absorption or drying quality.

The hot June and July, and the almost absence of rain this year, resulted in a crop of seed which produced an oil of only 172 iodine value as against a normal of 186. That means if you use oil of that character this year in your paints you are going to get in trouble when those paints are applied in damp, cold climates in New England, for instance, in the fall of the year. They will not dry properly and you get a non-drying and chalking unless you take care of that by the introduction of a large amount of drier.

This slide shows the result with this year's oil, the top being 186 oil, for comparison, that is good oil, with 5 of lead manganese drier. It shows the hardening in 24 hours, as against 172 oil, test No. 2, with a hardness of only 6. If we increase our drier to 7½ percent of that of B oil, we still get a hardness of 6, and if we increase it to 10 percent, we still get a hardness of 6.

All these tests were not made in a laboratory where you get ideal drying conditions, but they were made on the roof of the laboratory on a very cold night recently where we had a fog and intense dampness. We did find, however, that if we used this year's crop of oil, sample oil, with lead manganese and cobalt drier, we put some cobalt in with lead and manganese, we did speed it up so we apparently get satisfactory drying.

Before you get into trouble this year with your oil, I think it would be well for you to take that caution and see that you use more drier than you had contemplated, and you will be sure to use a more powerful drier including some cobalt.

Various Activities

Some of the things taken up during the past year by the scientific section are shown in this circular. (Slide.) One matter we took up with the American Manufacturing Chemists Association and with members of Congress was voluntary co-operation to anticipate regulatory meas-

ures. We would suggest that you, as manufacturers, consider the possibility of putting these two statements on the labels of all paint and varnish and lacquer products. They may save you lawsuits.

There was a bill in Congress, introduced by Senator Bingham, requiring skull and crossbones on all paint cans and everything else that goes in the household if they contained any volatile poisonous material. That bill, fortunately, was defeated, but if anything of that sort should come up again we will be in a fine position to combat it if we can go up on the hill and take a few paint cans and show that you are already guarding against that situation, by advising the public to take reasonable precautions.

State health rules were taken up in different states and we co-operated with the state legislatures on those.

We have conferred frequently with the National Safety Council.

We have worked with the unfair competition bureau in so far as analytical work is concerned and analyzed something like thirty or forty samples during the past year.

We have co-operated with the flax institute in their work in North Dakota in every possible way.

We have recently taken up the subject of compensation insurance in the lacquer industry, but we have decided to drop that as the result of a questionnaire we sent out recently which indicated that only about fifteen out of fifty-five people from whom we received answers were making lacquer or at least were interested in lacquer, so the lacquer committee has decided to drop that subject.

(Slide.) The question of guarantees comes up every now and then, and we have prepared a statement on guarantees of paint which I think most of you have received. Only recently we received an architectural specification from Philadelphia which required the painter to guarantee that the manufacturer would reimburse him if anything went wrong with the paint in five years, and certain sums of money were withheld for that purpose. We tried to point out the fallacy of that and have drawn up a statement regarding guarantees in general for the paint industry.

Technical Accomplishments

(Slide) Some of the things accomplished during the past year I will now discuss in a brief way, the technical matters, and illustrate them with slides. One is the new test for anti-skinning of paint and varnishes and enamels and the type of thinner to use in those products to prevent skinning. Most of you have probably seen that circular recently issued.

(Slide) This gives the result of the use of different types of thinner combinations. Another circular was on aluminum paint and we tried to point out the fallacies as well as the advantages of aluminum paint for certain purposes. We have tried to cover the entire subject in a circular of about forty pages. I believe that gives you abstracts of everything that has been done on aluminum paint over the last twenty years. There was included in that circular a test of aluminum paint and we indicated very clearly that the white paint was far superior from the standpoint of light reflection.

Government Specifications

We also issued a pamphlet on United States government specifications, which you can obtain at any time, showing every specification issued by every department of the United States government, where you can buy it, where it is obtainable, and indicating the character of the material which they employed.

(Slide) We also issued a circular on the yellowing of white enamels and lacquers and indicated a very simple test to make to determine the yellowing characteristics.

(Slide) Here are the results of some of the plasticisers used in white enamels for refrigerator finishes.

(Slide) We also developed, in the laboratory, in the past year a very simple, yet very efficient apparatus for determining the hardness of any type of coating by this swinging method, a hardness rocker which is extremely simple and which measures quite accurately the hardness of any coating, either during the drying period or thereafter. This shows the results on hardness of a number of typical coatings.

(Slide) We also published a circular during the year on interior flat wall paints of the non-absorptive type and gave the results on over forty different samples. We indicated the type of blistering that was formed on some of these paints and presented quite a comprehensive review of that whole subject.

(Slide) This gives the chart of the results on forty-seven different samples on the market without trade names, of course.

(Slide) We also published a circular which shows how interior finishes, pianos and other work, radio cabinets or whatnot can be tested in an accelerated cycle the same way that we have been testing outside paints under accelerated tests. This indicates the cycle we are using for determining quickly the durability of interior finishes and some of the results.

Varnish Making by Blowing

We recently published a circular on a cold method of making varnish by blowing, wherein it is all placed in a flask and blown under certain conditions to produce varnishes and tung oil which will dry clear and hard in about two hours. We are not recommending that method but we simply published it as something that may be well worth while, well worth the study of your own laboratories.

We indicate in the circular what special properties are developed by the blown process of making varnish, rather than the heat treating process.

(Slide) We have also indicated how those varnishes wear at Miami, Florida, varnishes made by the cold blowing method rather than the hot kettle method. We got quite remarkable service at Miami, Florida, in a period of about six months on some of those samples.

We also published a circular on a new type test for metallic paints on iron and steel. We actually have secured in six weeks comparable results to three years of exposure on metal paints under ordinary conditions.

(Slide) We brought to your attention chlorinated rubber as a new material for this industry and its possibilty along different lines and have indicated how it wore under various climatic conditions.

We have brought to your attention some of the new synthetic resins of the water white type and indicated how they could be plasticised to make them more durable.

We indicated the poor results obtained on some of the resins of the sugar type, resins made from sugar.

We indicated a new type of exposure test to indicate in three or four days the light effects upon varnish coatings applied to rubber. Also, the extremely small amounts of antioxidant in varnish sometimes will increase the life of the varnish by fifty percent. We have found that to be true and yet we haven't been able to check it up in all cases where we can recommend these things definitely, but undoubtedly the trend in modern varnish for the future will be the introduction of small traces of chemicals of this sort which will increase the life of the varnish to a very great extent.

We indicated the new method of protecting underground pipe from corrosion for the oil refiner and gas producer.

We indicated the fallacy of recommending low-grade, cheap casein paints for world fair building in Chicago, making exposure tests on a large number of panels for the World Fair Commission. Their idea was that a casein paint might last them two or three years, but it lasted about four days on our roof.

We published a circular last week on quick drying house paint tests in Miami, Florida; Gainesville, Florida, and in Washington, and indicated the possibilites of getting quick drying paints that would stand in very pale tints.

We brought out the effects of mildew on those paints in Florida, with possible methods of preventing mildew.

We published circulars on the effects of copper screening and copper nails and unprotected metals upon white paint and indicated a method by which copper could be protected so it would not stain the white paint on dwellings.

The last thing I have here is just two or three slides on tung oil to indicate the progress that has been made during the past eight months.

Tung Oil Slides

(Slide) This shows the plantings in the United States. There are now planted about 25,000 acres. You know about five years ago we had about 200 acres. Now there are planted in America 25,000 acres of tung trees. It will be a number of years before we will come through and produce any great quantity of oil, but they are there and growing and we hope for good results.

(Slide) I want to show you here a very beautiful picture that I took about a month ago in Bogalusa, Louisiana, bout 800 acres on the plantation of the Great Southern Lumber Corporation. You see the green of the tung oil trees and in between that is a crop of crotalaria that greatly enriches the soil between the rows of trees. I got there just at the time of the year when that is in full bloom and the green leaves are still on the tung oil trees, and for miles around it was like a flag with yellow and green stripes—a very beautiful sight. The Great Southern Lumber Corporation has gone into that quite extensively and that promises well.

We have also introduced seed throughout the world to sixty-four different producers in thirty-eight different countries, not producers, but experimenters who have planted anywhere from 10 to 2,000 acres. A man who went with me to Florida last month was Mr. Forbes, of Burma, who planted 2,000 acres of tung oil trees and came all the way from Burma to the United States to find out what we are doing. He is now going back with the firm intention to plant 25,000 acres more for the British paint and varnish industry.

We are not here to plant tung oil trees ourselves and we are not personally interested in it financially or otherwise, but we do want to get people doing it all over the world, so we will all be more independent of that very important raw material that we need in our industry. So we are encouraging everyone to plant in every country where there is a satisfactory climate and satisfactory soil conditions.

These are some of the plantings in Burma. These came from seeds from our Florida groves, and that is one in the lower part of India.

Here are some in Queensland. We have quite extensive plantings in Australia and New Zealand.

(Slide) Here are some in Madagascar. I think in all there are about 10,000 acres planted outside of the United States from seed which we have furnished to these thirty-seven different countries.

(Slide) The last slide is simply an indication of what is going on in the laboratory at the present time for the coming year, and it indicates the character of work that we hope to accomplish during the coming months. Thank you very much.

President Felton:—Gentlemen, are there any questions you would like to ask Dr. Gardner? I am sure we realize what a difficult thing it is for Dr. Gardner to press into a few minutes the scope of work which probably takes months and years to plan, but from what we have seen today it is evident that he has not only accomplished real things in the immediate past but has worth while projects on foot for the future.

What action will you take with the report of the scientific section?

Colonel Callahan:—I move that it be received and filed.

(The motion was seconded and carried.)

Save the Surface

President Felton:—The next item which we will consider is "Keeping 'Save the Surface' Alive.". I can sympathize a bit with the chairman of this committee because I had just a little bit to do with it before you honored me with this office. The present chairman has a smaller appropriation with which to work even than I had, so that I can say that I sympathize with him, but in spite of that he is doing a good job, he is doing it smilingly, and we know it is well worth while. I have the pleasure to present Charles W. Eastwood, chairman of the "Save the Surface" committee.

Charles W. Eastwood:—I, too, shall be very brief and simply call attention to the several important points mentioned in the report which is completely printed, and I would like to say at the very beginning that Mr. Felton, the former chairman, started us on the right road, so that our task has been somewhat easier.

Of course, the discontinuance of the association's national advertising has resulted in an urge upon the committee and the staff to study and take advantage of every other availble opportunity for publicity within the limited means, and some heretofore unexplored avenues have provided very valuble publicity in encouraging the use of the paint and varnish products and have served to keep alive the slogan, "save the surface."

Perhaps the broadest appeal we have made and the broadest outlet for our propaganda has been the radio broadcasting of the story, "Color Magic." During the past ten months, broadcasts prepared by our staff have gone out from 111 stations located in the United States and 12 stations in Canada. We think it is a considerable coverage. We have had broadcasts from five of the fourteen most powerful stations in the country. The response from these stations in asking for more and more material has been very gratifying. We would commend to all the men here that they become familiar with the machinery which we have provided for the furnishing of these broadcasts, so that the local clubs may receive the benefit. It is no longer an experiment and it is really going forward and doing considerable good.

Another important piece of advertising has been certain publicity in the Ladies' Home Journal. We have had the benefit of all that circulation for this particular story, "Paint and Prosperity."

I want to say here that the story was written by our own Miss Kent and that she, acting as her own press agent, interested the Curtis editors—I think she had some help from Mr. Felton, too—at any rate, we received all that publicity.

In addition, the catalog that is published by the Ladies' Home Journal, the house plan catalog, now carries a page which contains the printed specifications of our bureau. That goes on request to home owners who are interested and is a real circulation affair.

A number of stories have appeared in other publications. I won't mention them by name. Good Housekeeping has in their exhibit room in New York a room indicating the advantages of paint for walls.

All this seems rather general, but great emphasis has been placed on it because, as I say, we lack funds for space buying, and the usual routine activities have been carried on just the same.

Now the guide book, the window displays, the furnishing of mats and other things, have gone right on. This report, I hope you will read. It contains some mention there of our staff. I would like to just say that "our staff" may seem rather misleading because it really consists of Miss Kent, Mr. Shannon and under the direction of George Horgan, and when our committee met in New York a month ago and reviewed their work for the year, we were simply amazed at the amount of publicity which had been gained. I am just touching a few high spots here. The very fact that there are so few and so much has been accomplished is very significant, and we just wish to pay a tribute to them and to the attitude shown in the face of certain discouragements.

There are several recommendations in the report, but there is one I would like to emphasize, and that is the need for the several manufacturers, so far as they can do it, using the "save the surface" slogan in their literature wherever it is possible, because we are losing, there is no question about it, prestige, because we are unable to spend the money for promoting that slogan, and until such time as we can reinstate that national advertising which created that slogan, we all must do the best we can to give it the publicity which we can in our own literature.

President Felton:—Mr. Eastwood has made a suggestion that we all use "save the surface" in every way that we can. I wonder if anyone here today can tell us of any unusual use which they have been making of it in their own organization, or to further the work of their own organization. Has anybody anything they would like to offer on the subject of "save the surface"?

If not, what action will you take with the report of the "save the surface" committee?

(It was voted that the report be accepted.)

Save the Surface Report

(The committee report on save the surface, distributed to members, was an illustrated elaboration of the remarks of Mr. Eastwood, giving photographs of a map showing distribution of the radio stations using the color magic broadcast, of the "mats" sent to national newspapers carrying stories on color, of the pages in the various magazines, of the guide book, and of window displays. Extracts from this printed report follow.)

Radio

The widespread radio program developed as the result of a request for broadcasting material last fall from the Philadelphia Paint Club. The chamber of commerce in that city offered to co-operate with the paint club by allowing it to present programs on time that had been purchased by the chamber. The original request was for five talks, but by the time these had been given their continuance until spring was requested.

With the thought that these talks should reach a wider audience, sample broadcasts were sent to one station in each city of the United States and Canada, with the suggestion that they be used in unassigned time. The result was, as indicated, that one hundred and twenty-five stations used the talks. Some of these stations devoted a regular day and hour each week to the programs, advertising "color magic" on their printed programs; others introduced the material into their homemakers' hours, and still others used the talks for programs sponsored by paint manufacturers and dealers. Dozens of letters came in to headquarters from the radio stations, telling how well the talks were received.

All paint clubs were advised of the tie-up that had been made in Philadelphia and were offered the radio material if they wished to make similar co-operative arrangements or buy time on the air, but none took advantage of the opportunity with the exception of the Cincinnati Club. In Cincinnati three programs a week for three months were contracted for because the "color magic" talks were available.

After ample time had been given the clubs to develop radio programs if they so wished, letters were then sent direct from headquarters to stations in the thirty-six club cities and the talks were subsequently broadcast in seventeen of these.

A new series of radio talks is in preparation for release this fall and winter, and all paint clubs will be advised of the station nearest them broadcasting the save the surface talks, so that they may cooperate with the stations and publicize the broadcasts in their communities and in this way get the greatest possible value from them.

Teacher Co-operation

In spite of the fact that this material has had such a wide "circulation" on the air, there seemed to be no reason why its usefulness should end once it had been broadcast. Consequently, the first move in distributing "color magic" in printed form to the public was made in September, when a notice was inserted in "Practical Home Economics," a publication distributed to more than ten thousand teachers of interior decoration and home economics in the high schools and grade schools of the country. This notice offered "color magic" without charge and also advertised the guide book of painting and varnishing. Already 267 requests have been received, and the home office of the publication estimates that the final total will be from five to eight hundred.

The first step in the distribution of this material was selected because it provides such an excellent opportunity for educating the coming generation of buyers to the protective and beautifying values of the products of our industry. Other fields of usefulness for "color magic" will be developed as time and funds permit.

In the Newspapers

The distribution of illustrated mats to newspapers is being continued, although budget limitations have made it impossible to issue these releases every other month, as was formerly the custom. In 1933 two sets of mats will be mailed out at the most advantageous seasons—spring and fall. During the past months the mat mailing list has been fine-combed, so that all possible waste might be eliminated, and, at the same time, new newspapers are constantly being added so that the industry obtains every inch of white space available. One hundred fifty-two newspapers are now on the active list. These are located in thirty-nine states and have a combined circulation of 2,085,667.

Paint Stories in Print

While time and the curtailment of staff have not permitted the preparation of as many articles for individual publications as formerly, quite a few stories have been placed in the large magazines and in the smaller ones where the possibility of stimulating paint sales seemed to justify the writing of them.

Promotional material has appeared in the Ladies' Home Journal, the American Home, House and Garden, American Restaurant, Your Home, Amusement Park Management, Advertising Displays, Science and Mechanics, Practical Home Economics, the Grade Teacher and several farm publications. The total list of stories prepared by the editorial department this year, including the material released to radio stations, newspapers and that appearing in the campaign publications, numbers 151.

Other articles are in preparation for the Ladies' Home Journal, Good Housekeeping, Trained Nurse and Hospital Review, the Country Home and the rural journals. Stories will be suggested to various periodicals and prepared as time permits.

Editorial Service

In addition to the regular routine work, the editorial department constantly handles many requests for the material. For instance, Tampa, Florida, conducted a painting contest for the houses of that city and printed paint stories, day after day, in the Tampa Daily News. They called on save the surface several times for material, and during the thirty days of the contest's duration over a dozen campaign stories appeared.

When Philadelphia staged their "Make Philadelphia the Best Painted City," the call came in for additional radio material and broadcasts were prepared and sent to them.

Helping Dealer and Painter

Half a dozen new ads, attractively illustrated, have been prepared to aid dealers and master painters. Free mats for these ads are sent on request. All that is necessary for an advertiser to do is to insert his name, address and phone number, and send it to the newspaper office. An additional feature of some of the ads is that space may be bought co-operatively and several names inserted.

Three page advertisements were placed last spring in "Newspaper Advertising Service," a publication distributed to newspaper editors, telling them of the twenty-three specially prepared ads that

were available, so that they might be instrumental in stimulating the paint business in their territories. Many paint men believe thoroughly in newspaper advertising but are unable to use it because they lack the time or facilities for preparing advertising copy.

As a result of the space taken in "Newspaper Advertising Service," requests were received for 1,603 mats.

President Felton:—If Mr. Roh is in the room, I am going to ask him at this time to give the report of the special committee on the proposed amalgamation of the two associations.

Amalgamation

Mr. Roh:—I think most of you in the room heard the president's report this morning, and I won't take much of your time in telling you how we arrived at the decision.

The following gentlemen—S. R. Matlack, E. S. Phillips, C. J. Schumann, F. P. Cheesman, D. W. Figgis, William Zinsser, Ludington Patton, William Richter, and F. L. Sulzberger—representing the American Paint and Varnish Manufacturers' Association, Inc., the National Paint, Oil and Varnish Association, Inc., and the educational bureau of the paint and varnish industry, were appointed to consider the amalgamation of the American Paint and Varnish Manufacturers' Association, Inc., and the National Paint, Oil and Varnish Association, Inc.

Following a morning's deliberation of the subject in New York City on September 27, 1932, the following resolution was passed:—

This committee is of the opinion that this is not the opportune time to recommend any definite move toward further amalgamation.

Economy would not be effected nor would service to our membership be improved by an amalgamation at this time.

It recommends the continuance of the committee.

This resolution was passed after a full discussion of what had already been accomplished to bring about a closer affiliation of the associations—the service now rendered under joint operation of the two associations at the Gregg Memorial Building, and economies, if any, that might accrue.

The first step toward amalgamation was in 1923 when the offices and some of the activities of both associations were centered in New York City under the direction of a general manager. From that time on, as most of you know, much overlapping and duplication of effort has been eliminated and avoided through joint operation and joint committees.

The concentration of all the activities and the administration in Washington was the outcome of continued thought and study of this subject.

The reorganization and refinancing plan adopted by both associations brought our activities still closer together.

It was the unanimous opinion of the committee that better service could not now be rendered the memberships of both associations through further amalgamation.

It was also the opinion of the committee that further economies could not be made by amalgamation now.

President Felton:—You have heard the action of this joint committee who have very carefully discussed this matter. You have heard their recommendation. What is your pleasure?

Colonel Callahan:—I move that the report be received and the recommendation adopted.

(The motion was seconded and carried.)

President Felton:—We are down now to our last item of business. We have always manifested a great interest in legislative matters. The fact that Mr. Somers has been willing to carry on this work done so ably under the direction of his illustrious father is reassuring. I have the pleasure to present at this time Honorable Andrew L. Somers, who will give the report of the legislative matters committee.

Legislative Matters

Mr. Somers:—Your reference to the work that is being done and has been done by your legislative committee, especially where you touched upon the one who preceded me in the task, touches me deeply at the particular moment, so that I beg of you the indulgence of being permitted to express the thoughts that come foremost to my mind. Ordinarily I would greet an opportunity such as this with a great deal of satisfaction and happiness. This is a task that my father loved, a task that he wove about with certain traditions. It is a task that I too shall love and I should love to be worthy of the traditions. But the mingled emotions that arise are due to the fact that I must go on alone with the infinite loneliness of his absence, feeling as I do that every effort of mine will be inadequate, but nevertheless with a determination that I shall try to inspire on the part of those who follow in this organization the same degree of confidence that he enjoyed.

A legislative report, my friends, is never dramatic, frequently monotonous. I shall, in following the precedent set by the previous speakers, endeavor to make it as short as possible. But before I enter into the report itself, I feel it my happy privilege to extend to Mr. Rice and Mr. Sampson, and especially to William J. Pitt, the thanks of this organization, which I know you give freely.

Mr. Pitt's task is one of difficulty. He has been unusually successful in his work, and I feel that we owe him a great debt of gratitude. The years 1931 and 1932 were somewhat off years in legislation. Most of the legislatures that met were concerned more with emergency legislation than they were with those incidental measures which had to do with small groups. Consequently our work was not so difficult. Nevertheless there were several measures presented to the various legislative bodies throughout the country that did require considerable attention.

In Kentucky there was Senate Bill No. 36, which had to do with the licensing of contracting painters. This passed the Senate of Kentucky but was defeated in the House.

The New York City board of standards and appeals, after numerous and prolonged discussions, adopted certain regulations for the application of paint and varnishes by the spray method. These regulations were so modified as to be satisfactory to your committee.

The New York State department of labor, after several hearings and consideration extending over several years, are about to adopt an automobile spray painting and repainting code. The latest advices received indicate that final action will shortly be taken, and, from our discussions with the department, these regulations will be reasonable and satisfactory to your committee.

The Minnesota Law

The Minnesota state commissioner of agriculture held a conference with local paint interests because of alleged noncompliance with the present formula labeling law of that state, and indicated an intention to seek additional legislation at the next session of the legislature for the purpose of better controlling the sale of paint, particularly that shipped into the state which he claimed contained as high as nineteen percent water. In the opinion of your committee no additional legislation is necessary, and the commissioner has ample power under the present law to deal effectively with the subject, within the jurisdiction of the state, though he perhaps lacks the means and facilities of enforcement. Your committee will continue to watch the subject in co-operation with the local paint club.

Your committee felt that the legislation then on the books of that particular state were sufficient for him to justify any proper action that he might take, and we have opposed extending those regulations.

In Wisconsin a tentative bill has been drafted for introduction at the next session of the legislature which would contain unusually drastic requirements—the regulation, registration and licensing of contracting painters, also journeymen painters, based upon technical standards, skill and experience and requiring, of course, an examination before engaging in such business or trade. The subject is receiving the attention of the local paint club, with whom this committee is cooperating.

The Board of Commissioners of the District of Columbia had introduced in the last Congress, Senate Bill No. 2824, HR-8013, to assess an annual inspection fee of $5 on air pressure tanks used for painting and decorating and other purposes, no matter how small the size of the tank or what recognized standards of construction are followed. The bill passed the Senate without discussion, and now remains in the House. The bill is improvidently drawn, and imposes numerous unwise and highly objectionable provisions, particularly such an inordinate license fee. Your committee will continue to follow the subject.

Vocational Education

In the last session of Congress an attempt was made to discontinue the existing moderate appropriation to the states for promoing vocational education. At the request of prominent members of the association and of the educational committee of the International Association of Master Painters and Decorators, the committee urged that the sight appropriations heretofore made be continued. The Smith-Hughes act to provide for co-operation with the states in the promotion of vocational education in agriculture, trade and industry, in proportion to population, and to create the federal board for vocational education to co-operate with the states, was enacted only after much effort and to meet a great need which existed and to build for the future. Widespread opposition arose when this effort was made to withdraw the vocational trade training aid heretofore extended to industry and agriculture. The amount involved in thus assisting the vocational schools throughout the country engaged in preparing young men for industrial pursuits, the building trades, etc., amounted to about two million dollars per annum, which stimulated interest by the states in this subject which perhaps could not otherwise be accomplished, and resulted in the establishment of trade training facilities which far outweigh the investment in the project. The Master Painters and Decorators' International, state and local associations—in fact, the paint manufacturing and distributing industry itself—have always shown deep interest in the furtherance of vocational education, particularly with regard to the much-needed training of painters. These advantages, gained after years of effort, would have been lost if this appropriation ceased, and many of the states, because of conditions, would not or could not carry on this constructive work. This appeal from the contracting painting interest of the country for cooperation induced your committee to take steps towards discouraging action that would result in the withdrawal of such productive appropriation or the abolition of the federal board for vocational education which has so ably demonstrated its efficiency and public service. So strong was the sentiment in favor of this policy of co-operation, the House by a viva voce vote, and similar support in the Senate, continued this worthy appropriation, subject to a reduction of ten percent, which decrease will still enable this splendid work to be carried on in the interest of trade and industry. Your committee urgently recommends the continued interest of these associations in the furtherance of vocational trade training in co-operation with the master painters and decorators' organizations and other industries.

I do not hesitate to tell you that I have no fear of that passing in the course of the next few years.

There was another piece of legislation that came before the House. You know that under the Smith-Hughes act certain sums have been, from time to time, given by the Federal government to states, to help if it can in the vocational education. Now, due to the depression, the need of economy, all of those things have been cut down. I will say that we are very happy to assure you that this good work of vocational training will probably continue in the course of the next few years, regardless of how much they see the necessity of cutting down their budget.

Your committee has been called upon by headquarters and others to conduct considerable correspondence during the past year not only relating to legislative matters directly, but to impress upon the membership the importance of the work of this committee and its value to them through continued association membership and support of local clubs, to the end that the interests of the industry may be fully protected in the legislative and regulatory field.

The expenses of the joint legislative committee for the year 1931-32 were $907.27, which includes $675 paid to the legislative reporting agency.

Comment on Conditions

Mr. President, inasmuch as this report today is the last report of the day, and while I am very hesitant indeed to impose upon your kindness, I do feel that I would like to supplement some of the statements made today by Mr. Lawrence. I justify it because of the fact of your intense interest in this depression, because you and I, the business men and the politicians of Amerca, are looking forward. We have been examining to the best of our ability the forces that were dragging us down in this business condition, and we are endeavoring to see our way out. Mr. Lawrence pointed out and painted a very definite and complete picture of what we were suffering today. I regret that he did not go a little bit further and tell you something about the plans of the future. I feel I should like to tarry here for about five minutes to do that.

I shall not attempt to exhaust them—that would be impossible in that time—but there is one thing that hangs upon the horizon of this nation which I believe is of utmost importance to every business man, and I want to stress it here. To give you a reason for my right to speak about this, may I call to your attention the fact that during the last session of Congress it was my privilege to act as chairman of a committee that had to do with the study of this depression. We called forth from America all of the leading economists, all of the leading bankers, all of the leading experts on international exchange—we brought them before our committee and we said: "Gentlemen, what is the matter and what are we going to do"

Oh, we went further than that. We brought into our committee every available man from abroad, from India and China, too. We said, "What are we going to do?"

There were thousands of suggestions. Nearly every man had his own definite views of what we could do in America. But, strange to say, they are all unanimous upon one thing. They were unanimous upon the fact that the amount of money in this world has been cut down in 1926, and it naturally follows, when you cut down the amount of money, you are cutting down purchasing power, and they traced the major portion of this depression to the cut in the purchasing power of the people of the world, and they said, "How are we to correct it?"

We can correct it in a very simple way, just reverse the things in cost.

The Economic Conference

As the result of this investigation, our committee recommended the calling of an international conference on economic and monetary affairs. In the course of conversations that our committee had with Winston Churchill, we mapped out our program and our plans, and Winston Churchill said at that particular time, "Upon my return to Great Britain I shall call that conference, because I consider it the most important thing upon the business horizon today. Recovery from the depression is utterly impossible without it."

As a consequence Great Britain called a conference. What is it to do? I fear you shall envision it in the terms of radicalism of 1894, yet I would ask you not to do that for it is not the same movement at all. The movement then was utterly impossible. The movement today has taken from the thoughts of those days the constructive suggestions and endeavor to mould them into a practical program.

In 1926, Great Britain for some reason unknown, put India on the gold standard. In order to go on the gold standard she had to accumulate gold to back her currency. To do that she had to sell silver, and she sold 400,000,000 ounces of silver in six months. The tragedy of that, my friends, is this—that she reduced the purchasing power of her own people in India and China. She actually cut in the course of six months the purchasing power of China and India into one-half, and Mr. Gandhi who previous to that time could have purchased two of those things that he wraps around his graceful form, can now purchase one.

The Chinaman who could have bought two typewriters in the past can now purchase but one. Bear in mind the similarity between that cut and the depression that we have here in America.

In the destruction of the purchasing power of these people, they set up a dislocation in international trade, and that dislocation meant the disappearance of international trade.

How can we do it? How can we correct it? It is not so difficult. I do not advocate fixing silver at any particular rate in relation to gold, but I do advocate the necessity of working out through a compromise with Great Britain and in this international conference, an agreement on the part of Great Britain that India will not continue to dump silver. Let silver come back of its own force to its proper level and you will revive the purchasing power of those Oriental people.

That is the movement that is going to start the recovery from this depression. This depression today may be described as the cold motor. You put your foot on the starter and get no response, but get out and give it a little crank and the first thing you know it is running and your battery is charging. If we can revive international trade in this world, that will be the little start, the little crank, that is going to bring us back and will bring your commodity level up, because strange as it may sound, my friends, it has been the experience of 150 years that silver is the precursor of your commodity market. Your economist who spoke to you today said there could be no recovery without an increase in the commodity values. He said that there was in evidence some few months ago, three months I think it was, a move to have the commodity value raised, but there was no demand behind that and it fell short, and until you create a demand, you will never raise the commodity level, but you must rehabilitate the purchasing power of these benighted people across the Pacific before you can expect any corresponding prosperity in America.

America the Leader

America, I think, should be the leader of all the nations of the world. She has the greatest resources. She has the finest intelligence, she has the most idealistic conception of what life means to the individual, she, by all rights, should be the leader of the world. In this economic conference it is our hope that she will maintain the leadership, that she was called for that purpose, that she might take up the beacon and point the way, take up the torch of light and show the benighted people of the rest of the world how they may be brought upward and onward to the one end that we all have in view, to the end that the institutions we have builded in this country may remain, that all the people of all the world, because of her maintenance, may find life not only a condition where it is possible to exist but a condition where it is possible to be happy. I thank you.

President Felton:—Mr. Somers, we are grateful to you for not only the report which you have submitted, but for the additional exposition which you have given us so clearly on the present economic situation, or at least one phase of it as you see it. Thank you, very much.

What action shall we take on the report, gentlemen?

Mr. Calman:—I move that it be received.

(The motion was seconded and carried.)

President Felton:—That completes our program for this afternoon.

Discussion by Mr. Callahan

P. H. Callahan:—I really think before you adjourn there ought to be some comment made on this address that we have heard. Now, we have had distinguished men here this morning and this afternoon—Mr. Lawrence, international celebrity, and this distinguished son of a distinguished father come in here and gives us something to think about, more progressive, and carries the question farther than either of the other men who were here.

I was certainly interested in that address of his. I, of course, largely agree in his quasi-recommendation. Unfortunately, Mr. Cornish came in at the end of that address and I was looking for him all the time. Mr. Cornish in the nineties was a gold man, I was a silver man. I might disagree with Mr. Somers about the radicalism of '94. I was one of those radicals. I can go even farther than Mr. Somers in making a recommendation. When we have the example of England before us—well, I am not going to precipitate that silver question just at this moment—where her recovery, until the hunger strike, was largely staged, but her recovery from financial troubles and meeting her financial problems was largely solved.

The years of 1897 and 1898, as Mr. Cornish will bear me out, will rather prove the theory that Mr. Somers was advancing, the lack of money, the lack of purchasing power. It must be remembered that gold was discovered in 1897 in Alaska, in 1898 in Africa, and the cyanide process of recovering gold was developed in 1899, and it gave us that money and brought us out of a panic that began in 1893 and was at its height in 1894, and we had strikes the like of which in this country were never known.

We should thank ourselves today that our political fabric in this country is not nearly as unsound as it was in the nineties. There are in this world today no more contented people than in America now, considering their distress and their trouble. I have a greater respect for our countrymen than even I had during the war, when we have ten million people out of work and no riots, no unrest, no political disturbance. Our social and political fabric is as sound as it ever was in the history of the country.

I have no fears for four years from now, when we find people out of work confronted with financial distress, lack of good food and homes, without any uprising, without any riots, but suffering this inconvenience like we rich men are doing, too—so-called "rich men," largely for the reason that we have been able to show our people working for us that employers have had as much to endure and as much worry and have suffered as great losses and inconveniences as the people working for them.

Now, we have distributed our unfortunate conditions throughout the land so that it has reached everyone, and we have contentment in this country in the face of the greatest distress that has ever been known.

Coming back again to the subject, Mr. Somers, of course, illustrates what our congressmen have been doing, and we too often hear a sneer here and there about what politicians may be able to do or what they cannot do, but he has demonstrated that they are able to procure information, data and experience, and profit thereby, and with minds like his you have other evidence that our country is very safe.

It is a pleasure to listen to this distin-

guished son of our old friend who was so close to us all in those years.

Mr. Cornish Comments

Mr. Cornish:—I was not noticed because I was standing up and heard the magnificent address of Mr. Somers. I will confess I was very much pleased, indeed, to see the way he handled his subject, the way he commanded attention, the pleased greeting that was given to him by our people. I remember that the first man in the industry, outside of the National Lead Company, whom I came to know and honor and love was his respected father. I have, also, always admired Colonel Callahan. He is true to his convictions. He states them strongly. He phrases them well.

It is true that I have no confidence in this purported way to adjust conditions and stop the depression. I know that after the war I think France was the first one that changed the value of the franc from twenty cents to four cents, and any person who had occasion to travel through France found that for a four-cent cost and a 2 or 3-franc tip you could ride all over the city of Paris. When I was travelling over the continent, I found that I could hire things in France, an automobile and chauffeur and travel all over Europe and save one-third of the cost as compared to what it would have meant had I hired the chauffeurs outside of France.

A little bit later, Germany was troubled with her indebtedness and by tampering with the money, depreciating the money of the country, they paid off all of their bonds and all of the bonded indebtedness of all of their country. It looked as though they had found a way to readjust themselves by destroying the value of every credit in Germany, but a year or two ago, since then when there came a little bit of a question about Germany's financial ability, everybody in the world that had anything payable in German marks was afraid that Germany might repeat that experience and they began to draw their money out of that country and nearly prostrated the business of Europe.

A little bit later England comes in. She has reduced the value of the pound sterling something over thirty percent. Now, it has accomplished two purposes. Anybody that had a contract payable in pounds has found that that government, by that act, has destroyed the value of their credits and of their contract.

The English Situation

It is true that it reduced every wage in England by thirty percent. It reduced every salary in England by thirty percent. They first reduced the salaries of their government employees, then they changed the value of the pound and reduced it 30 percent. That would look as though it was one way to readiust their condition. But, I believe that it will be found that England, when she departed from her high standard of honesty, if I do not offend by using that word, when she departed from free trade and the open door, the integrity of her money, which was accompanied by justice of her courts wherever they were, has taken a step backward that has hurt her credit.

And when we consider that money is really the smallest thing, the quantity of money, that affects the value of money, and that the credits that are a substitute for money, or rather the credits that add to the work that money does, are more important than the quantity of money, any action by any government that causes a distrust of credits and uncertainty, when you make a contract what it is to paid in and the value of what you are to get for it, will result in a reduction of credits that will paralyze business and be more injurious than the lack of money.

It is true that gold was discovered in Alaska. It was discovered in South America. It is, today, being found in our Western mountains more than in the last ten, fifteen or twenty years. The miners out of work there are now prospecting for the gold mines and finding them.

The reason why gold has been a good money metal is because of the enormous amount in existence, whether used as money or otherwise. It is so great as compared to the changes from year to year that the conditions that affect its value result in less than that of any other commodity known. But it is the credits that are based on gold that constitute the necessary medium of business, and any attempt by government to affect every contract in the world does more to destroy credit and prostrate business than any addition to the currency in any form could possibly result in.

Mr. Somers Explains

Mr. Somers:—I have no intention of debating a subject with a friend of some years' standing, as Mr. Cornish, and a man, who, when as a boy I first came into the color industry I had pointed out to me as one of the industry's most outstanding intellects.

I have had a great deal of affection for him and therefore arise at this particular occasion only to clear up in his mind something that I think he misunderstands.

When speaking on debts, at the opening of this past Congress, I made a statement on the floor which, if I remember the words, was this—I stand wholeheartedly for the maintenance of the integrity of the American dollar. I believe in the gold standard for the American people because by custom and habit it is the only standard suitable for them. But I did not suggest a change in our standard. Our gold standard and our dollar are fixed by legislation. We must not change that. To change that would bring about the very condition that you say, Mr. Cornish. It would drag down in no time the tremendous credit structure upon which all industry revolves.

My thought is simply this, we have a gold standard in America. We have another standard in other countries. There is such a shortage of gold in this world that I do not believe every nation in the world should be on the gold standard. There is only eleven billions of dollars in gold in the world. I believe, Mr. President, however, that every nation which can adhere to the gold standard should do it, but I believe, also, that every nation which finds it natural to deal in silver should deal in silver. I do not believe that a fixed ratio should be arranged between the two. After all, if gold is to be a standard to America, then silver becomes a commodity to America. One is money and the other is a commodity. In China, silver is your standard and gold is your commodity. But let us consider gold as your standard.

What I said was simply this, let us stop India from dumping that tremendous amount of silver on the market and breaking your markets because silver is the precursor, strange to say, of commodity prices. As silver goes up, so go commodities. As silver comes down, commodities drop with it. Stop India from doing that so there will be no unnatural surplus upon the markets of the world to drag down the value of commodities.

Then, too, many of the nations, all of the nations of the world, excepting Spain and the United States, debase their silver currency. Now that simply means this, that where they had a shilling of 900/1000 fine in order to sell a surplus of silver; in order to bring a certain amount of gold into their treasury they debased their currency to 500/1000 fine. That gave them a surplus of silver, that was an unnatural surplus of silver dumped on the world market. That, combined with the unnatural surplus of silver created by India dumping silver, destroyed the purchasing power of the Orient. All that we ask today is that that currency be refined, be brought back to its original standard, correct the errors we made, stop India from dumping silver, put India back on the silver standard. It was good enough for her for centuries, she prospered under the silver standard. Under the silver standard you heard of no Gandhi movement, you heard of no revolution because of the salt situation under the silver standard. Why create a condition of that kind in this world?

The gold standard is not natural to the Indians. Why, do you realize, that the Indian will work all year for $27 and it costs him $25 a year to live? Put the difference of $2 in gold on the palm of your hand and you can whip it off without notice, it has no visual appeal, but to the Indian $2 in silver has a visual appeal. Therefore, he is silver-conscious. It is bred in him just as his religion is. He cannot think in terms of gold.

Why did they in 1926 upset that happy condition? If you will remember, Mr. Cornish, you speak about your credit system, what broke your credit system in this world? It was the Hatry bankruptcy in London, followed by a similar one in Paris, followed by one in Sweden, and then the Insull bankruptcy in America. Those were the principal bankruptcies, bankruptcies of the credit structure. Why? Credit depends upon the ability of redeeming, and the minute you take away from the base the ability to redeem, you destroy that credit structure.

Mr. Cornish, I don't want you to misunderstand our movement. We are not trying to destroy the gold standard in America. We want that maintained. All we say is let us rehabilitate by legislation what we destroyed by legislation, the purchasing power of the silver-using countries. After all, silver is just as good as gold, just as substantial. Why can't we give it the prestige of being money? Just say, "Here, we will recognize it as a medium of purchase on the part of these people," and in that way we will bring back a value to it.

The law of supply and demand will create its value; we won't fix it. We will let the law of supply and demand create the value and recognize that value, and in recognizing that value, we give these people the new purchasing power, we will elevate their standard, and we will revive industry in America.

I hope, Mr. Cornish, that I have made my thought clear this time. I do not believe in fixing the ratio, just to give silver a prestige by agreeing not to dump unnatural surpluses upon the world market, and then let the law of supply and demand fix the value of silver in relation to gold, whatever that may be.

Mr. Cornish:—I think, Mr. Chairman, that Colonel Callahan by calling on me gave me an opportunity to say something that illustrates the facility in discussion of our young friend whom we like so well and admire so much. Let me say further that he has stated some important facts. There is no doubt that the decline in the value of silver has lessened the price of nearly everything that is produced in those silver using countries. There is no doubt that the more ignorant people of the world get in the habit of saying a dollar is a dollar, a silver coin is a silver coin, and sell on that basis and think that they are paying, and that the decline in silver has worked a great hardship to the Eastern countries that were using silver. I know that that is a fact. I know that that is true of the purchase of everything that we buy from them because they are willing to take a silver price and even though when it gets outside of their country it has a gold value, yet the man that buys is buying on a silver price, and those people are accepting it. How long they will accept it, I don't know. At present there is no question, but I will agree with my young friend, that the decline in value of silver has been one of the things that has hurt business as far as it is connected with the silver using countries.

President Felton:—Your sustained attention is indicative of your interest, I think, in our program, and I would like to call attention to the fact that tomorrow's program is equally interesting. Of course, the highlight of that will be Mr. Cornish's address. I do not urge you to come. It is only necessary to remind you, and I hope that you will carry that reminder on to those who may not be present at the session this afternoon.

If there is nothing else to come before us, I will call this meeting adjourned.

(The meeting adjourned at five o'clock.)

Other Reports

(Several reports were prepared by joint committees of the National Paint, Oil and Varnish Association and the American Paint and Varnish Manufacturers' Association, and were printed for distribution at the meetings, although not read. These reports are as follows:—)

Tariff

S. R. Matlack, Chairman

The tariff committee during the past year has kept in touch with proposed changes which might affect our industry. One such proposed change was the Shipstead amendment (H. R.—10?36). This amendment contemplated a duty on incoming shipments of tung oil and perilla oil, at the rate of two cents per pound. Visits were made to Congress and protests lodged. The amendment was defeated. Had it passed, the cost to our industry would have been over one million dollars per year.

In view of the continued discussion of tariffs on the part of the two major political parties, it is probable that your committee may be kept active during the coming year in efforts to prevent the enactment of changes in the traiff act, which would be inimical to our industry.

Foreign Trade Development

Ralph Plowman, Chairman

Our exports of pigments, paints, varnishes, enamels and lacquers totaled $15,126,846 for the year 1931, as against $21,689,059 for the year 1930, or a decrease of approximately 30 percent. The decrease in our exports between the years 1929 and 1930 equaled approximately 25.5 percent.

During the first six months of 1932, exports of these products totaled $5,515,184 as against $8,381,065 for the corresponding period in 1931, or a decrease of approximately 34.2 percent.

Countries off the gold standard, exchange control, import restrictions, tariffs, and reduced purchasing power accounts for virtually the entire decrease in exports as shown above.

Flax

F. C. Smith, Chairman

The flax institute of the United States having been organized, the joint flax development committee was discontinued with the close of the last fiscal year of your associations. The new flax committee was appointed to act as a means of contact between your associations and the flax institute of the United States.

The last report of the flax institute gives a complete picture of all activities up to March 28, 1932, the date of its annual meeting; and copy of same follows this report.

The flax institute has, during the past summer, made a particular study of the relation between varities of flaxseed and the quality of linseed oil produced from them. This will have a definite bearing on varities to be recommended for planting next spring. The work already accomplished by the flax institute, and their definite and constructive plans running well into the future, merit our sincere commendation and hearty support.

Drought and grasshoppers played havoc with all northwestern crops, and the October 1 government estimate indicates a crop of 13,200,000 bushels, which is about 2,000,000 more than last year's final estimate, but about 10,000,000 bushels less than the five-year average production.

It is probably well that we are definitely on an import basis. The mere threat last June of producing more than our domestic requirements was reflected in such very low prices that a continuance of them might seriously curtail future planting.

Chamber of Commerce U. S. A.

J. B. Keister, Chairman

Your representatives attended the twentieth annual meeting of the Chamber of Commerce of the United States, held in San Francisco May 17-20, inclusive.

Most important matters of domestic and international importance were discussed. Ways and means as to how to remedy present-day business difficulties and ills were thoroughly discussed.

The subjects considered were many and diverse. They ranged from new merchandising methods and local passenger transportation, to industrial planning and governmental expenditures.

In all of the comment at various sessions, there was an undercurrent of conviction that economic reconstruction was to be achieved by individual initiative and the exercise of individual responsibility, and not merely by legislation, or the structural overhauling of business. There was a definite demand on the part of the delegates to this convention for a minimum of governmental interference and competition in business, modification of anti-trust laws, the reduction of governmental overhead resulting in burdensome taxation, the closer scrutiny of public fiscal policy by business men, strengthening of voluntary business organizations for the achievement of common purposes, and the more effective regulation and control of trade and indnstry.

Your representatives to this convention believe that our organization should not only continue its relationship with the National Chamber of Commerce, but should encourage a closer relationship and a larger contribution of time and effort in the encouragement of their activities.

Resinous Products & Chemical Company

Scientific Section of the Educational Bureau

Exhibits at the First Paint Industries Show

PROCEEDINGS OF THE

American Paint and Varnish Manufacturers' Association

SIXTH ANNUAL MEETING

Washington, D. C., November 14 and 15, 1932

Directors' Meeting

Monday Forenoon, November 14

The board of directors of the American Paint and Varnish Manufacturers Association met in the Mayflower Hotel, Washington, at half past nine o'clock Monday forenoon, November 14, to consider matters to be brought before the convention on the following day.

Those present were Horace S. Felton, president; Wells Martin, second vice-president; Charles J. Roh, treasurer; Dr. R. A. Plumb, W. H. Gerke, E. R. Armstrong, R. W. Lindsay, L. H. Conklin, George V. Morgan, general manager; and George B. Heckel, secretary emeritus. J. F. Kurfees and H. L. Wilkinson were guests.

Regrets were received from Dwight P. Joyce, R. F. Robertson, and H. A. Melum.

Business Session

Tuesday Forenoon, November 15

Horace S. Felton, president of the American Paint and Varnish Manufacturers Association, opened the single business session of the sixth annual convention in the ballroom of the Mayflower Hotel at half past nine o'clock Tuesday forenoon. He mentioned the fact that he was the third generation of his family to be vitally concerned with the progress of the paint industry and pledged future personal support to the association in the same degree as during his incumbency as directing officer.

In his formal address, Mr. Felton reviewed the severity of the country's and the industry's experiences in the past three years, but he felt that the association had a splendid record, not only of strength in membership but in prestige and efficiency, a fact attested by receipt of the medal of award of the American Trade Association Executives. After touching briefly on one or two phases of work, such as stabilization, simplification and promotional activities, Mr. Felton urged close study of all the reports distributed to the members and then gave five recommendations for future activities. These appear in the text of Mr. Felton's address, given below:—

President's Address

Our year just about to close has brought us to the end of the third year of the depression, the severity of which none of us has experienced in former times. To go through this depression without taking unto ourselves the lessons which it teaches is to leave us poorer by the neglect of that knowledge. Just as the depression has retarded individual business, so it has slackened the pace of associational life. In fact, a much heavier toll has been extracted from trade associations in general, and we hear all about us gloomy comment concerning this one or that one.

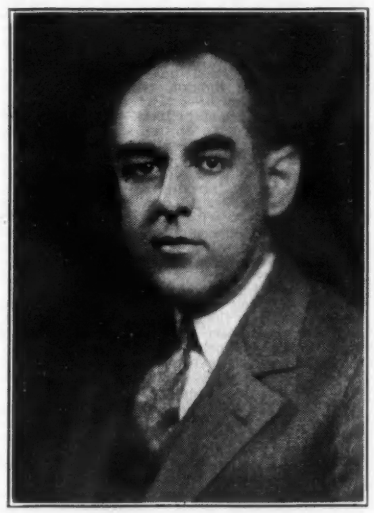
I think a few minutes' reflection from this standpoint concerning our own association will be interesting. Figures show that the interest in our own association has been surprisingly good. During the past eleven years the average of membership has been 210. At the present time our membership is 305. During the year we lost fifteen members by resignation, dropped four for the non-payment of dues, a loss of not quite ten percent. Apparently, our industry as a whole appreciates the fact that, "It's no time to shut off the power when you want to go up-hill."

I have conferred with Mr. Heckel, the chairman of our membership committee, and he tells me that in the judgment of his committee, we have only sixty-five companies left who by any stretch of the imagination can be considered logical prospects for membership. This means that our association is approximately eighty percent sold to its potential market. Our membership committees and their chairmen are to be congratulated on this record, and I think it speaks well for the regard in which our association is held by the industry at large.

The Trade Association Award

Although I am aware of the fact that our members rightfully expect an accounting of stewardship on the part of association officers covering their work for the year, I am not going to burden you with a review of the various activities, for this is handled more intimately and in greater detail in the printed report by the general manager. I suggest a careful perusal of this report at your leisure. I must not let the opportunity pass, however, of expressing the appreciation of our Board of Directors, of the earnest and splendid work carried on by both committee chairmen and personnel and by the staff association headquarters, under the direction of Mr. Horgan. That this work has been effective is attested to by the signal honor conferred on our association in receiving the American Trade Executives Association Medal of Award. Our membership should bear in mind that we not only received first mention this year, but have been honorably mentioned on a previous occasion. We all rejoice, I am sure, in this appropriate recognition.

At the risk of offending others, I feel that I must mention particularly the work of the stabilization and the simplification committees. The work of both has been outstanding and merits your consideration. While the benefit of the work of both committees may seem to accrue slowly, I bespeak your sustained interest, believing that over the long pull substantial dividends will be forthcoming.



Horace S. Felton
The Presiding Officer

I thought it would be interesting to collect some information about the interest manifest in our various activities by association members. To this end I requested Mr. Horgan to supply me with a resume of inquiries, but the information is too voluminuous to attempt consideration in this address. My hunch was that there would be revealed a decided interest in the work of our scientific section and the information which has been put into my hands justified it. I was impressed with the keen interest manifest in this activity, carried on under the quiet but forceful leadership of Dr. Gardner.

"Industrial and Engineering Chemistry," in August, published an article showing the results of a survey they had just completed. Of forty-six companies who answered their survey, 67.5 percent had increased their research expenditures in 1931 compared with 1929. In terms of sales 75 percent of the reporting companies were spending a larger proportion of their sales dollars in research. The significant part of the report says that an overwhelming number of the companies reporting state that their research has been found profitable even in the last two years. At the present time our scientific section is working like all other departments, on reduced expenditures and personnel. You will agree with me, I am sure, when I say, "full speed ahead with our research just as soon as revenue warrants."

Value of Promotion Work

Before I leave this brief discussion of our activities I want to mention hurriedly our promotion campaigns. Clean-up and paint-up and save the surface have been reduced to such proportions that to call them "campaigns" is simply to deceive ourselves. In spite of this handicap effective work is being carried on by each group. Examine the mounting dollar-and-cents report of sales which are reported each year by the major cities throughout the country who have been promoting clean-up and paint-up campaigns. Where the school children co-operate—and no really successful campaign can be promoted without the aid of the children—note how rapidly the number of children co-operating mounts each year. Our industry has in clean-up and paint-up a veritable gold mine which it is operating on a stripping basis instead of digging deep into the rich veins of ore which are ready for us whenever we see fit to tap them.

Save the surface must depend now on whatever free publicity it can garner and upon individual exploitation. I have felt for a long time that it could profitably follow what several other industries are doing, notably the paper box and the laundry industry. These industries utilize the sides of the motor trucks of their association members to get over their message to the general public, in color. We could do the same, and if the idea was generally adopted we could count on a minimum of 2,000 trucks carrying a monthly message to the public, comparable in a small way, at least, to the former magazine advertising which we carried on at a much greater cost.

Constantly Changing Markets

Early in 1932 the Department of Commerce investigated the outstanding records made by some 202 manufacturing concerns, forty-three retail distributors and ten wholesalers, to learn what had been responsible for their success. Various reasons were submitted in questionnaire form, and out of a total of 416, increased sales effort and advertising policies were mentioned 334 times as being most influential. Our market is constantly changing, hence the necessity for regular and consistent sales and advertising promotion effort. The following tabulation will remind you of this change:—

2,500,000 new babies are born each year.
400,000 graduate from high school each year.
1,250,000 couples marry each year.
2,000,000 families move each year.
1,400,000 people die each year.

In closing this section of my report, devoted to our activities, I do not intentionally omit emphasis on unfair competition, traffic, legislation, tung oil development, etc., since they are all valuable adjuncts to the entire structure, but since they can more forcefully be covered by the committees sponsoring them, I will not attempt further comment.

Presidential Recommendations

As to recommendations, I have carefully considered the following and trust they may be of some value to the industry as a whole. Some of them would require maturer thought than I have been able to give them, but with careful pruning, I feel they would be productive of good.

Group Meetings

1. I will first discuss something which was launched unsuccessfully during the year, but in which I still have faith and which I desire to recommend to the new cabinet. I refer to the plan of holding group meetings during the course of the year in various important paint manufacturing centers throughout the country. Particularly in times of economic distress do I feel this necessary because of the inability which many find to spend the time and money to attend general conventions. In February, following a meeting of our board of directors, such a group meeting was attempted in New York city, with only a sparse representation of the local trade there attending the session. My own feeling is that such meetings are vital, for instance, to the success of such work as the simplification program. I do not believe that a program of this kind can be properly discussed at a formal meeting of a paint club where there are represented many interested only passively in the project, and consequently the endorsement of such a group does not carry the weight with it the program deserves. These meetings would, furthermore, develop local latent talent in the interest of the association and at the same time would give the association personnel an opportunity to study local problems and ideas at first hand, thus better equipping them for service to the membership at large. My hope is that a definite program along these lines will appear feasible to the new administration.

Cost Accounting

2. I have spent a great deal of time in studying the various types of association work and have noted the emphasis which is being placed on cost accounting. Many association are maintaining cost bureaus similar to the one which our association has seen fit to abolish. In a recent vote taking into consideration the type of work which the executive in charge felt most important, cost accounting was voted almost first on the list. I do not advocate a return to our former cost bureau, but I think we could profitably associate ourselves with some reliable cost accounting service which would be at the command of our cost committee to do detail work for them, thus enabling this committee to give to the industry cost information which involves too great a job to assign to volunteer effort. Many associations are profitably carrying on ratio studies and I believe this would be a valuable point of contact for us in keeping our membership "sold." It is true that this information is now available, covering perhaps a half-dozen of the larger companies, but to be effective the study should embody a complete cross-section of the industry. I am sure such organizations as the research department of the National Association of Credit Men, Dun's, Bradstreet's, etc., would provide the medium through which we could function. It may interest you to know that the Department of Commerce is now functioning in this work for one of the large associations representing national distribution.

Price-Cutting

3. Closely allied to cost accounting is the subject of "price cutting." I believe there is more interest in this subject today among our membership than in any other subject. I wonder how much of this condition is caused by improper information concerning one's operating expenses. Here is what is happening in the retail field. The Department of Commerce analyzed 570 business failures. More than 58 percent of the owners or managers of these concerns had not completed a high school education. Still more significant is the fact that a majority of them kept no books and many others had an entirely inadequate accounting system. The Department of Commerce report says of such enterprises that "failure was inevitable." A leading daily commenting on this survey said editorially, "But the creditors are also held to blame. In more than half the studied cases the principal creditors claimed ignorance of the causes of failure, indicating that they had made no proper effort to discover the business ability or stability of those with whom they were dealing. And yet by extending easy credit they encouraged a bad business venture and contributed to its collapse. For it is almost an axiom that too much capital or credit can ruin a newcomer in business more effectively than a shortage of both which compels economy and conservatism." Perhaps more intelligent management would protect quality merchandise from the depredations of "junk" which in the can looks "just as good" to the consumer and the quality of which he cannot determine for perhaps six to twelve months later. This type of merchandise is being cleverly disguised today in odd-shaped and brightly lithographed cans and because the gospel of "judge not a paint by its container" has not been effectively preached, the maker of quality paint is temporarily the loser thereby.

Merger of Associations

4. A special joint committee was appointed during the year to study the wisdom of merging our two associations into one. After careful deliberation this committee does not recommend the move at this time. They recommend that the committee be continued. I recommend that the matter be considered again during the new year, feeling that this must ultimately come in the interest of efficiency.

A Five-Year Plan

5. My last recommendation is that a group of men, either our board of directors or a special committee, take it unto themselves to give serious consideration to a working plan for our association over a period of say five years. With the coming of each new administration I feel that there is a tendency to change the scope of the work to adapt it to individual thought. A long-range study of the probable economic factors which are apt to affect our industry and the methods we should follow to meet these changes is a study which I think challenges the thought of any group. It will not be an easy job but I think it will ultimately be worthwhile. It is true that our program is well established along the lines of activity, which have already been mentioned, yet I feel that there is much which can be accomplished along merchandising and marketing lines with a comparatively small expenditure of money. I find that other associations are much more aggressive than we in this respect, and so long as our present status of promotion exists, there seems to be all the more need for the activity.

I am going to ask your indulgence while I present a few statistics which I think will prove interesting. Some few days ago I encountered a group of figures which traced the progress of our industry during the course of thirty years from the standpoint of plants manufacturing paints and varnishes, the number of wage earners and the value of the out-put. The period under consideration was from 1899 to 1929, inclusive.

Number of Plants

1899	600
1929	1,063

(Increase of 77 percent; 2½ percent per annum.)

Number of Wage Earners

1899	9,697
1929	29,211

(Increase of 191 percent; 6 1/3 percent per annum.)

Value of Output

1899	$69,568,235
1929	568,975,838

(Increase of 718 percent; 24 percent per annum.)

Average Plant Output

1899	$115,937
1929	535,254

Increase of 361 percent; 12 percent per annum.)

Average Output Per Worker

1899	$7,179
1929	19,478

(Increase of 171 percent; 5¾ percent per annum.)

Should our industry repeat its performance of plant output in the next thirty years at the same rate of the past thirty years it would mean that by 1960 the value of its output would reach the vast sum of $4,085,246,516.84. Whether our population will increase at the proper rate to absorb this production, no one can say. Certainly, it will be interesting to live sufficiently long to witness the spectacle.

Possibilities for Future

So much for figures. Granting that we even approximate this total, what part will associational activity play in the setting as it develops over the period of years? Certainly, there will be greater need than ever before for closer contact between members of the industry. History has proved this, has it not? One thing is certain, and that is that if our industry develops in the future as it has developed in the past, then business in general will develop in a corresponding ratio so that a giant machine will be in operation of such size and capacity that former endeavor will appear puny by comparison.

This machine will require closer supervision than ever, and from recent experience in the minds of all of us, who is there to say that regulation will be better from without than from within? No, I am confident that the trade association will come more fully into its own, although its objective and scope may change. Ex-President Coolidge has put it aptly, thus:—"Neither the State nor the Federal government can supply the information and wisdom necessary to direct the business activity of the nation. About all that can wisely be done in this direction is provided by trade organization. Additions to the system promise most if they are voluntary and provide a better co-ordination of activity." Paul Aldrich, editor of the "National Provisioner," defines a trade association in language which can be understood by every industry:—"The job of the trade association is to do creative work, to dispel the ignorance of its members not only as to the fundamentals of their business, but of collateral fields and co-operative industries as well. Such a program, effectively pursued in an efficient association set-up, will give the trade association plenty to do in the future."

The association, which will make it its business to get information for its members, distribute it to them and teach them how to use it will not lack for a program and will have no difficulty in retaining interest in its activity.

At this time I desire to express thanks to the various members of the association staff for the splendid co-operation which they have rendered. Mr. Horgan, our general manager, has been a real help. It pleases me to say that we are indebted to the representatives of the trade press who have stood ready at all times to render service. To all I say, "Thank you. May my successor be equally fortunate." I close leaving with you the thought expressed in the poem of D. M. Stoneback entitled, "Today, Not Tomorrow."

Today's the only time that's real,
Yesterday's gone forever,
The best that's in you, let reveal
Today, or maybe never.

Today, that's when to do your best,
Don't view the past in sorrow,
Make the present a smiling guest,
Uncertain world, tomorrow.

There's no use of heaping rueful blame,
On mistakes both made and gone,
Today, lived right, will make you game
To face still another dawn.

Report of the General Manager

After acceptance of Mr. Felton's report, George V. Horgan, the general manager, summarized his annual report, which is substantially the same as his report to the National Paint, Oil and Varnish Association, published in the proceedings of that organization in this issue. In outlining the various activities of the association and results obtained, he called attention to the award of the American Trade Association Executives as a notable happening of the year, and he put particular emphasis on the value of the work which the association and other units of industry are doing to eliminate government competition in business.

Treasurer's Report

In making his report as treasurer, Charles J. Roh gave an itemized account of receipts and expenditures, the latter being gratifying because they were kept well below income, with no curtailment in the efficiency of the operation of the main work of the association and headquarters. To the headquarters staff for their loyal service in the face of necessary financial reductions, Mr. Roh paid particular tribute.

F. C. Atwood took the place of G. C. McEwen in presenting to the convention the report of the plant managers' committee, which was as follows:—

Plant Managers

The plant managers' committee is pleased to report that another very successful year has been completed by the Federation of Paint and Varnish Production Clubs. The number of member clubs was increased by two during the latter part of the previous fiscal year when the Montreal and western New York clubs were organized, and this year the Baltimore club was added. There are, therefore, at this time eighteen active clubs.

In spite of the fact that these strenuous times are difficult for membership committees, we can report an increase in our membership of one hundred new members and forty-one additional subscribers to the Digest. The federation now enjoys a total active membership of nearly one thousand.

At our convention just completed, we had a total registration of 163, which is an increase over the previous year. Our sessions were well attended and the club papers, eighteen in number, aroused considerable interest. One of the clubs presented a trophy for the paper that created the keenest discussion. It should also be reported that eleven of the club papers were entered for the American Paint Journal award.

Exposure Test Code

Your plant managers' committee was instructed to bring in a report as to the desirability of adopting "the code for designating and evaluating exposure tests in paint, varnish and lacquer coatings." You will recall that this was presented to the federation by the New York Production Club at the convention last year. Most of the member clubs discussed this subject at their regular meetings and it was definitely decided that its adoption would be advantageous to the industry. Since the majority of member clubs approved of the "code" as it was or with minor changes, your committee recommended its adoption at the recent convention of the federation.

Briefly, this "code" will standardize a method of reporting exposure tests. It not only covers such points as method of application of material being tested and the type of panel on which the test is to be made, but it also specifies the terms that are to be used to describe the results. This latter condition is of prime importance and will be used in many different ways. One of the main advantages is that a panel exposed in Florida can be examined at the test fence from time to time and the degree of weathering reported in such a manner that a technician in New York knows what is happening without actually seeing the test. Once our technical men become familiar with this standard method of evaluating and designating exposure tests much more information will be available to them from the test fences now in operation throughout the country. It will no doubt be necessary to alter this code from time to time as our technical knowledge improves and as new products are introduced to the trade, but nevertheless, it is a splendid commencement and the New York club may well be proud of its achievement.

This committee also considered methods of financing the digest, the official bulletin of the federation. The majority of members clubs believe that the publication of the digest should be continued since it is of great value to our production men in keeping in touch with technical developments within the industry. Through correspondence we find it possible to obtain the views of our members and in presenting the report to the executive officers of the federation we were of assistance to them in making their final decision.

The Paint Industries Show

Those present this morning that arrived in Washington a few days ago are possibly expecting some mention in this report concerning the first paint industries' show held. The members of this association that missed the show are unfortunate in that an opportunity to gain considerable knowledge first hand of the many innovations in machinery and raw materials used by our industry has been lost. We are sorry to say that the federation was requested to close the show on Sunday, and thus one of the best educational features of this convention was missed by many.

We would like to say that the paint industries' show is born of the fundamental need to display the products of small as well as large supplies with equal opportunity and to allow the production man to not ony read about and hear, but rather feel, taste, smell and see. Coupled with the trade and technical journal advertising, his attention and memory will remain alert to try out and use those things with which he is impressed.

Another important feature is the ability of the producer of specialty lines to present his product to our production men in an economic manner. He possibly cannot afford to circularize the trade and spend large amounts in advertising. Such an article is the composition millstone displayed at the show. A great deal of interest was displayed in this new development and most certainly no paint grinders can afford to overlook the advantages of using this new type of stone. It was of distinct advantage to the production men to see this product because the majority were unaware of the fact that such a paint millstone existed.

Similarly, all the exhibits were of educational value and the favorable comment heard on all sides would seem to warrant the continuance at future conventions of this splendid feature. As a matter of fact, we believe the members of this association would benefit as much as our production men from a visit to the paint industries' show and possibly next year a different ruling could be obtained as to when it must be closed. Its great educational value would be worth while investigating.

Dry Color Shipments

We would point out at this time that the work of the federation dry color committee has been completed and that we believe it to be of sufficient value to gain your support. We, therefore, present this resolution, adopted by the federation, that the American Paint and Varnish Manufacturers' Association be asked to adopt our tentative specification for the testing of dry color shipments. We submit that this procedure is similar to that of previous years, when other standards developed by the federation have been adopted by this body.

While the plant managers' committee has not undertaken the same amount of technical work this year as was accomplished in the previous year, we do believe that the committee serves a very useful purpose. One member from each club of the federation is appointed to this committee and quickly obtained. We recommend that the practice of the last several years of holding on this committee the same club representatives be continued, except in a few cases where from stress of business the members have been unable to properly represent their clubs. We believe that in the majority of the clubs considerable time is devoted to plant managers' committee work and that much will be accomplished in the future by this co-operation.

In conclusion, may we read an excerpt from the by-laws of the federation:—

"It shall be the duty of the plant managers' committee to act in an advisory capacity on matters of common interest to constituent clubs on the one hand, and to the American Paint and Varnish Manufacturers' Association, Inc., on the other."

With this in mind, we are desirous of reporting that the members of the federation wish to thank the American Paint and Varnish Manufacturers' Association, Inc., for past assistance and express the desire for continued co-operation to the end that the whole industry and the general public be benefited.

March G. Bennett was unable to attend and in his absence, Mr. Horgan summarized the principal points in the report of a special committee on returned goods, which in full is as follows:—

Returned Goods

This special committee on returned goods was first suggested in June and was finally organized in September. There had been repeated reports that the return of paint and varnish products by dealers had in many places proved so general as to be a serious evil. The evil of department store returns had been investigated and dealt with in a report by the Chamber of Commerce of the United States, a copy of which was furnished the committee, and we were instructed to inquire into the matter. The Chamber of Commerce report dealt with returns by consumers and chiefly with feminine apparel, radio sets and similar articles, so that the situation was not comparable to that in the paint and varnish business.

We have endeavored in the short time allotted to obtain information and opinions bearing upon this subject from all sections of the country, especially, (1) information as to whether an evil actually existed; (2) and if so whether it was of sufficient importance to warrant taking action upon it; (3) and in the latter case whether it would be wise for this association to adopt a rule of conduct as to return of goods which would apply to the country as a whole.

Our investigation has shown that it is the general opinion that there is an evil existent in the practice of returning goods on the part of the dealer and of accepting returns on the part of the manufacturer. The evil seems to have been accentuated by the critical times through which we have been passing and by the frequent introduction of new goods by manufacturers whose customers are already stocked with their previous lines. Some are of the opinion that a manufacturer who introduces a new line to take the place of an old one is not only justified but is in some sense obligated to see that his dealers are relieved without loss of their stock of the old line when asked to stock the new one; and that the simplest and best way to do this is to take the old stock back. Our attention has been called to recent instances where this has been done, and the manufacturer's action has been severely criticized. Others have held that such a policy is wrong and tends to demoralize the trade, especially because it becomes increasingly hard to draw the line between a return of this kind and any others that the dealer presumes to make, and that all such agreements by manufacturers make it difficult for other manufacturers to maintain an equitable position upon this subject.

Overloaded Dealers

Attention has been called to cases where dealers have been overloaded with stocks of too many colors, too many sizes and in too great volume, proving to be a heavy burden to the dealer in these troublous times. In such cases dealers, acting sometimes under advice of their bankers, have returned the goods without permission and demanded credit under pain of the loss of their business if full credit was not allowed. Successful use of such methods has led to many dealers thus returning goods which they have had in stock for long periods and which should have been sold by them, and in most cases could easily have been sold had the items not been neglected. Goods have been sold to an increasing degree on advance dating terms and often with the privilege of returning all remaining unsold at the expiration of the dating period; and this has been sufficiently general to cause the dealer to demand the same terms and privilege of return from other manufacturers, and often with complete success.

There seems to be but one uniform opinion about returned goods in all parts of the country, and that is the broad and comprehensive one that something should be done about it. Many of the most experienced manufacturers who agree upon this main point believe also that owing to the varying conditions to be found in different sections of our broad and enterprising land there is no reasonable hope that this association can devise a definite rule covering the return of all goods everywhere, but that each section must of necessity work out and adopt its own rules to the conditions prevailing in that section. This they think will deal most effectively with the evils as they find them. The problem is already being handled in this way by groups of manufacturers in different sections and by some individuals. The Western zone convention of the N. P. last June, and the manufacturers' division of the Paint and Oil Club of New England may be cited as examples of group handling. These may serve as guides for others, and we attach to this report copies, (1) of the rules adopted by the New England group, and (2) the resolutions adopted by the Western zone convention.

The committee's conclusions and recommendations are as follows:—

1. That an evil exists, but as to its magnitude and causes there is no unanimity of opinion.
2. That at the present time the magnitude of the evil is not great enough to warrant an elaborate and expensive investigation by this association.
3. That such evils as are now known to exist can best be investigated and dealt with in the sections where they occur, and where the local causes can be known and analyzed, but that as a general principle the basis on which the local and individual regulations should be made should be that where the return is due to the manufacturer's error, either in faulty merchandise or wrong assortments of his selection, the dealer should be entitled to make return and receive credit and where they are due to the dealer's error he should be entitled to no return privilege unless at full cost of reconditioning.
4. That no definite rule governing the return of goods can wisely be promulgated by this association at the present time.

Appended to the report was a resolution on the subject adopted by the Western Zone convention in June, 1932. It follows:—

Western Zone Resolution

Whereas, the promiscuous return of merchandise has become a general practice on the part of certain customers, for which return the manufacturer has been in no way responsible, and

Whereas, such practice has become expensive and costly, resulting in increased cost of distribution, and

Whereas, such practice results in an indirect charge to other customers who do not follow the above mentioned practice,

Therefore, be it resolved that:—

No return of merchandise will be accepted except by permission of the seller,

Further, that a servicing charge of not less than ten percent will be made,

Further, that a shipper making such return will have to bear the cost of transportation of said merchandise;

Also, be it further resolved that:—

The seller recognizes certain responsibilities, and will accept the return of merchandise when proven defective; and when merchandise is sold to the consumer or painter on work in process of finishing will accept the return of unopened and unused packages in good condition, excepting where special orders or products are delivered;

Therefore, it is recommended that a committee be appointed by the chairman of the manufacturers and distributors' group to prepare a printed notice to notify the trade that the return of merchandise will be accepted in accordance with the above resolutions.

It is further recommended that all sales representatives be instructed that no return of merchandise will be accepted without first obtaining permission from the proper authority in the respective sales organizations.

Also appended to the report was a statement of the rules governing return of merchandise adopted by the New England Paint and Varnish Distributors division, a unit of the Paint and Oil Club of New England. This is as follows:—

New England Regulations

The New England Paint and Varnish Distributors' Division, a unit of Paint & Oil Club of New England, appeal to their customers to co-operate in an effort to reduce the return of merchandise which is the source of a great waste of time, money and materials and an inconvenience to all parties concerned.

The rules outlined in this pamphlet are to protect your interests, and will be the basis for distinguishing between reasonable and unreasonable requests. Their purpose is to guarantee the same reasonable privileges to all.

Please read these rules carefully. They are for our mutual benefit.

Rules Regulating the Return of Merchandise

1. All receiving departments are instructed not to accept goods without authority. No goods may be returned for credit without first receiving permission from office of the seller. Containers charged for, known as "returned containers," are an exception to the above.
2. Goods authorized for return, also returned containers must be prepaid on return.
3. Unsalable and obsolete merchandise is not returnable for credit.
4. Merchandise that has been in stock over sixty days cannot be returned for credit.
5. A minimum charge of ten percent will be made on all goods returned for credit (returned containers excepted). This charge is to cover cost of handling.
6. Discontinued lines cannot be returned.
7. The following merchandise is not returnable:—Oil, turpentine, alcohol, lead, dry colors and such bulk merchandise.
8. On orders for special colors or special formulae a ten percent overrun may be shipped.
9. Special colors and special formula goods are not returnable.

Unjust Claims and Excessive Returns Reflect Unfavorably on Credit Standing

Claims.—Merchandise is sold f.o.b. shipping point. Our responsibility ceases when we receive the bill of lading from the transportation company. Claims for damage to goods in transit must be filed with the transportation company by our customers. If shipment is received in damaged condition or short a number of pieces, have transportation agent make such notation on waybill. This will enable you to file and collect claim.

Shortages or errors must be reported within five days after goods have been received so that this matter may be given prompt attention.

A claim of this kind must be accompanied by a packing slip. Most shortages arise from the fact that small packages are either left in or thrown out with the packing material. Most damages arise from improper care in transit.

[At the conclusion of the report, Frank Bownes, Boston, told of the method by which the rules and regulations, which are really a code of ethics, had been circulated throughout the trade in the New England territory, and he said that the returned goods agreement had accomplished much good.]

The report was accepted.

Address by Thorpe

The schedule address of Merle Thorpe, editor of "Nation's Business," on "Government Competition in Business" was the special attraction of the morning's meeting and because of the work that is now being carried on by the paint and varnish and other industries to correct this situation the ballroom was crowded to hear what he had to say.

Mr. Thorpe declared that the American business man was the marvel of the rest of the world for his ability to work with others for the common good of an industry, and no association had demonstrated this faculty better than the paint industry organizations, whose work had been publicly recognized this past year. He cited the save the surface movement and the clean up and paint up campaign as promotional efforts of value not only in development of sales but in stimulating public morale. After dwelling at some length on the importance and function of color in our modern life, Mr. Thorpe went on to the subject of the presidential election.

If, said Mr. Thorpe, the vote on November 8 is to be considered in the light of a protest vote, it was an unconscious protest of the people against too much government. Achievement of an economic goal by government decree simply does not work, he declared; never has and never will. He cited the effort of the British government to solidify a monopoly on rubber by setting the price at one dollar a pound, to which act there was such resentment that great interests in other countries set about the growing of rubber and eventually rubber dropped from a dollar to eight cents.

Other instances were given:—The Cuban sugar pool, which increased the price of that staple at first to eleven cents a pound but stirred such resentment that the price fell to three cents when the market was overproduced. Also, the Imperial Silk Company pool in Japan, a price-fixing arrangement which collapsed, and Chilean nitrates.

We in this country, said Mr. Thorpe, set up the United States Farm Board as an instrument for supposedly benefitting the farmer by price-fixing. Proponents of the idea declare that were the Board to be abolished, American agriculture would be set back some twenty years, which, said Mr. Thorpe, wouldn't be such a bad thing inasmuch as farmers were getting 65 cents a bushel for corn and 89 cents for wheat at that time.

Tax Burdens Developed

Too much government develops a tax burden beyond the capacity of the people, Mr. Thorpe stated, and when a large part of such taxes are spent by government in direct competition with private industries the leaders of business wonder why. The speaker had found that 250 industries were suffering from goverment competition, and the government by selling at prices far below legitimate business enterprises is unsettling the public mind with regard to the fairness of the figures of the private establishments.

The government competition might be easier to combat, he thought, if it were not for fear of private business men that the government, through its agents, might actually put them out of the running. For example, he told the story of a dealer in rat poisons who thought he had made a fine sale in a certain community, only to have the negotiations fall through because a representative of the Department of Agriculture came into town and offered similar goods at a less price and offered the service of three government employees to do the work of extermination. This man, obviously annoyed and dismayed at the competition, nevertheless refused to do anything about it, pointing out that there are 5,000 county agents of the department scattered throughout this country, who, if they chose, could do him irreparable harm.

Fear of Making Complaint

There was another instance of such fear of a private business man to criticize the government in the case of a ship owner who was operating a certain ship with 700 men at a cost per day for each man of seventy-five cents, whereas the government paid a dollar a day to 1,200 men to operate the identical vessel. He did business with the Shipping Board and did not want to arouse their antagonism.

Mr. Thorpe gave instances of government in business by describing the working of a dairy and a hog farm by the navy. The dairy, he said, was in charge of a "cow admiral," who reported that milk bought through ordinary channels gave the seamen stomach trouble, hence the inauguration of the plant. Furthermore, it had yielded a profit of $420,000. However, had overhead been counted and a real cost basis established, no such profit would have been shown.

In all of its business operations, said Mr. Thorpe, the government runs into deficits for the good and simple reason that this government was set up as a political institution, not as a business organization. The very red tape procedure devised to protect the political liberty of its citizens—and in this red tape is good as a check—is impossible as a trade method. Government bookkeeping, also, is not devised to care for trade operatione and hence the total ignorance of what these competitive enterprises really are costing.

Government competition in business, said Mr. Thorpe, is a thing that has been slowly developing for the last thirty years under the guise of helping the people, and now it is backed by tremendous organized propaganda, put out by publicity departments of the various governmental branches. In one day, he said, there has been as much as 300,000 words of publicity material issued to media throughout the country.

The offer of governmental service in all categories of enterprise, said the speaker, had actually developed a tendency in some business men to lean too heavily on this government, which he felt was bad; he urged all business to stand on its own feet, and all business to regulate itself.

No Single Plan Will Work

With regard to the way out of the present depression, he felt that no single individual could do the leading, no single legislative device or economic plan could turn the trick. He had built up this thought after a trip of 14,000 miles back in the land of crossroads and grass roots, where he had gone to study the reactions of the little fellows, the men at the head of some of the 469,000 corporations which are not listed on the New York Stock Exchange. He thought too many eyes were focussed on the mere thousand corporations there listed. And these men, he found, are busily engaged in leading themselves; they are studying their own production, distribution and sales problems; they are not trying to reach out all over the world as many of them tried to do several years ago; they are content to operate in a restricted area where they can watch results, and because of this they are beginning to get results.

Affirming that he was not a pessimist, Mr. Thorpe summed up his talk in three phrases:

1. There is no reason for business to ask the government to do everything.
2. If the people lose their economic freedom, they will lose their political freedom.
3. The development of the nation will depend on the development of the individual.

Stabilization

Among the special committees set up during the past year to consider problems confronting the industry, was the stabilization committee for the study of practices that have a tendency to disrupt and demoralize. H. L. Wilkinson, as chairman, presented a lengthy report, revealing the subjects that had been taken up, how they were studied and giving a list of recommendations. Much of the work was undertaken with a view to eliminating uneconomic merchandising, and in answer to a questionnaire more than one hundred concerns stated their willingness to agree to discontinue such methods. Obviously, said the speaker, one way to do away with uneconomic practices was for a manufacturer to more accurately determine his costs, which Mr. Wilkinson urged all to do.

Wells Martin interpolated a brief report on price-slashing, to which practice he said there seemed to be no end. He deplored the extremes of bids entered for government work, which were of such a low level that there was no doubt the bidders were willing to do the work far below actual cost. For such policy prices, as he called them, he believed there were three principal reasons:—

1. A desire to liquidate excessive raw materials on hand.
2. A desire to keep plants in operation.
3. A desire to keep specific competitors from getting business.

Mr. Wilkinson, in continuing, presented a large chart showing the various problems which had been referred to the committee—a chart of such size that Mr. Kurfees was moved to inquire whether all of the problems had originated in recent times or whether any of them had been inherited from the distant past.

Stabilization Plans

Mr. Wilkinson presented several recommendations on behalf of stabilization which were adopted by vote of the convention. They follow:—

1. That the incoming administration should sponsor group meetings over the country to consider the above problems.
2. That greater study be given price systems and cost accounting.
3. That a survey be made of distribution costs.

Another recommendation that free deals, such as gifts of unrelated merchandise and prizes, be eliminated from the merchandising of paint and varnish products was discussed and referred back to the committee for further consideration.

Joseph D. Patton then presented a brief synopsis of the report of the simplification committee, which was adopted, and which follows in full:—

Simplification

The simplification committee during the past year has been a joint committee representing the three associations, namely, the American Paint and Varnish Manufacturers' Association, Inc., the National Paint, Oil and Varnish Association, Inc., and the National Association of Paint Distributors. This increased partcipation in an activity that involves so much of interest to our entire industry is a gratifying expression of the progressive attitude of our industry at large and is an indication of the splendid support which is given work of this character.

The activities of the simplification committee this past year have been confined to giving such publicity to the new simplification program that was adopted to become effective September 1, 1932, as would make it more generally acceptable and popular, and to the extent that the adherence of its restrictions would be recognized as common practice throughout the industry.

A letter pertaining to the new simplification and standardization program, together with a compilation of votes received from the questionnaire, and a list of the manufacturers who had accepted item No. 9, was mailed to approximately 700 manufacturers in our industry in February, 1932.

In February a letter and questionnaire were sent to west coast manufacturers, outlining the action that had been taken in regard to simplification and soliciting their adoption of the program. A most favorable response was received and it developed that the restrictions imposed by the simplification program were quite generally effective in that section with the exception of item number nine pertaining to the packing of oil colors and paste goods by liquid measure. This item received a 100 percent favorable vote in the questionnaires that were returned, and a formal acceptance of this restriction was adopted at the manufacturers' and distributors' group meeting of the western zone convention in July.

The simplification program was featured in a supplement to the March issue of "The Bulletin" and by a front page article in the July-August issue. Various articles have also appeared from time to time in the trade magazines, and the cooperation which has been afforded in this regard has been of considerable value and is highly appreciated by the committee.

Program number four of the National Paint, Oil and Varnish Association, Inc., was devoted to the simplification program. Wherever possible, presentation of the program was made by a member of the committee. In many instances, special meetings were held prior to the regular local club meetings for the purpose of discussing and considering the details of the various items of the simplification program. Resolutions approving the adoption of the simplification program were passed and recorded by twenty-three local clubs of the National Paint, Oil and Varnish Association, Inc.

The simplification program was adopted by the National Association of Paint Distributors at their convention in New York in February.

A letter and copy of the simplification program were mailed to the purchasing departments of the United States government in May. This communication called attention to the various items outlined in the simplification program and with particular reference to item number nine pertaining to the packing of oil colors and paste paints by liquid measure and the action that had been taken by our industry in this regard. A request was made for their co-operation in adhering to these restrictions in their purchase specifications. A similar communication has also recently been sent to all of the state purchasing departments.

From the very beginning of the simplification committee's activities this year they were solicited by the department of commerce to permit them to be of help in making the simplification program effective. It was felt that this was a job that was up to the industry and, concerning which, the Department of Commerce could be of no particular assistance. It semeed desirable, however, to have the records of the department changed from the restrictions imposed by the simplification program and was agreed upon in July, 1924, so as to include the items that have now been adopted. To accomplish this, the Department of Commerce required a direct expression from the industry in the matter. As a result, it was decided to allow them to send out a simple and modified acceptance form together with a copy of the new simplification and standardization program. This is all the assistance from the department which the committee has approved of, and there seems to be no question, judging from the returns, that this publicity has made a definite impression upon certain manufacturers who have not previously given serious consideration to the items of the new program.

A letter was sent by the department to about 700 producers, distributors, and users of paints and varnishes on July 15, 1932.

A letter was received dated October 13 from Mr. Ely, of the division of simplified practice of the Department of Commerce, stating that signed acceptances had been received from a sufficient number of manufacturers, distributors, users, and others interested in the simplification of paints, varnishes, and containers to insure the general adoption of the program by the industry as a whole, and they are, therefore, in a position to announce that the revised recommendation may be considered effective as of November 1, 1932.

From the information which your committee has, it is apparent that all of the restrictions of the new simplification program have been definitely recognized and generally accepted in the industry. General business conditions, however, have been such that stocks on hand of discontinued items on September 1 were larger than was anticipated, and for this reason certain companies found it necessary to delay action somewhat. However, since September 1, a number of concerns have sent announcements to the trade of their acceptance of the provisions of the new simplification program and there is every evidence that at least by January 1, all of the restrictions imposed by the new simplification program will be recognized as general practice throughout our industry.

Your committee recommends that during the coming year every effort should be directed to continue giving publicity to the present simplification program and to enlist the co-operation of any and all that may be violating any of its restrictions. This recommendation is made strictly from the standpoint that it will strengthen the activities for the future if we can be assured of a general adherence to a recognized program of simplification in our industry before attempting to enlarge upon the program.

Problems Referred to Stabilization Committee

1. Transportation:
- Increasing cost of small deliveries.
- Freight differentials.

2. Terms, Discounts and Credits:
- Excessive terms.
- Consignments.
- Quantity discounts.
- Over-extended credits.

3. Guarantees:
- Price guarantees against decline.
- Guarantees to increase dealer business.
- Service of performance guarantees.

4. Publicity of Advertising Problems:
- Destructive advertising.
- Exaggerated claims.
- Misleading labels—technically legal, morally wrong.

5. Price Problems:
- Exchange of price lists.
- Can differentials.
- Price slashing.

6. Types of Service Overdone or Otherwise:
- Excessive advertising material to dealers.
- Free samples.
- Free goods.
- One cent sales.
- Premiums.
- Returned goods.
- Replacing old stock.
- Small orders.

7. General Problems:
- Financing competitors' dealers.
- Department stores—Second grade paint.
- Reciprocity.
- Public Research laboratory.
- Defamation and disparagement of competitors.
- Bootlegging paint.

Officers Elected

Following a brief statement from Frank P. Cheesman that the committee on constitution and by-laws had nothing to report, the report of the nominating committee was given by Wells Martin, and the following were elected officers for the ensuing year:—

President—J. F. Kurfees, of the J. F. Kurfees Paint Company, Louisville, Ky.

First Vice-president—Horace S. Felton, of Felton, Sibley & Co., Philadelphia.

Second Vice-president—William C. Dabney, of the Dabney-Jones Company, Louisville.

Treasurer—Charles J. Roh, of the Murphy Varnish Company, Newark, N. J.

General Manager and Secretary—George V. Horgan, Washington.

Secretary Emeritus—George B. Heckel, of Philadelphia.

Directors—L. H. Conklin, of the Flood & Conklin Company, Newark; W. H. Gerke, of the Sargent-Gerke Company, Indianapolis; William H. Jarden, jr., of the McCloskey Varnish Company, Philadel-

phia; Dwight P. Joyce, of the Glidden Company, Cleveland; Wells Martin, of the Martin Varnish Company, Chicago; Oliver S. Orrick, of the General Paint Corporation, San Francisco; Joseph D. Patton, of the Pittsburgh Plate Glass Company, Milwaukee; Dr. R. A. Plumb, of the Truscon Laboratories, Detroit; and Wilbur Rice, of the United States Gutta Percha Paint Company, Providence.

Mr. Kurfees, after installation in office, told of his joining the association after attending a meeting in New York city some twenty-five years ago at the invitation of George Heckel. He recounted the great benefit which he had had from this membership and modestly asserted that the association hadn't had much good from him. However, he would try to do his best.

Among the reports printed and distributed were some which were not read before the convention. One of the most important of these was that on cost accounting. It follows:—

Cost Accounting

On account of the third successive year of depressed business conditions and declining volumes of sales and profits, very few inquiries concerning the installation of cost finding systems, budgetary control methods and analyses of the cost of doing business were received during 1932 at either the association headquarters or by J. A. Royer, who has been working with the association on such matters. Due to the disposition on the part of practically every manufacturer in the industry to reduce operating expenses owing to continuous declines in business volume, there is no question but what this condition was mainly responsible for the inactivity in inquiries just cited.

On account of declining sales, and the highly competitive state of business, it is also a matter of fact that most manufacturers at times have disregarded more or less the adequency of their cost finding system and took on a certain substantial volume of low gross profit business. The problem of disposing of raw materials purchased in the past at higher prices, the necessity of keeping intact skeleton organizations, the advisability of recovering in some measure the cost of continuing items of fixed overhead, no doubt, forced many manufacturers to take on certain low gross business where an adequate cost finding system taking into careful consideration every element of proper cost and a satisfactory gross profit would have prevented the taking on of such business.

Considering present business conditions the difficulty of bolstering sales, the disposition to take on certain low gross profit business, and in some instances the tendency to some extent to ignore certain elements of cost at the present time, your committee strongly contends that never has a period existed in the industry when the management of a company is so dependent upon an accurate manufacturing cost finding system, reliable and effective budgetary control methods and a dependable cost finding system for the cost of doing business as it is today. It is also contended that in many instances where manufacturer has cut expenses to a minimum and has delayed the introduction of such dependable methods in his business on account of the cost of its initial installation and subsequent maintenance until some future period when business gets better, it would materially strengthen such a situation if the manufacturer were to change his decision immediately and resort to such helps.

As a passing comment on the phase of present competitive business conditions, your committee feels that the amount of extremely low gross profit business taken on in relation to the remaining volume of business secured at a satisfactory gross profit, is one of serious concern to every manufacturer because of its ultimate substantial reducing effect upon the final composite gross profit percent of all business for the year.

It is assumed that every manufacturer in our industry today has a general accounting procedure with a representative chart of accounts which monthly presents him with a reliable balance sheet and profit and loss statement.

Key Points of Accounting

The fundamentals of operating every business and the key-points on every profit and loss statement are:—

1. Gross sales.
2. Returns and allowances.
3. Gross profit in amount and in percent.
4. Overhead expense (cost of doing business).
5. Net profit.

These fundamentals of business operations were never studied as they are today when every business man is fighting for volume, trying to keep up his gross profit percent, drastically curtailing his overhead expense, and last but not least, striving to keep in the "black" as far as net profit is concerned.

In order, therefore, that each and every manufacturer may be able to guide his course most intelligently, even in the face of declining volume of business, and arrive nearer his desired objective a year hence, it is highly essential to use the best tools at his command, and these tools are:—

1. An accurate manufacturing cost-finding system.
2. A reliable and effective budgetary control system.
3. A dependable cost-finding system for the cost of doing business.

1. An Accurate Manufacturing Cost System

Over a period of the last fifteen years, the association has made considerable progress in the way of introduction and usage by many of its members of adequate and reliable manufacturing cost-finding systems. Where such systems have been promoted by the association, installed by its cost accounting bureau, and in many instances where reputable concerns of certified public accountants or industrial engineers have made the installations, reliable results have been obtained.

There is still a lot of work to be done in this field where certain manufacturers have to date not availed themselves of the opportunity to improve in this direction and where constant betterment of all existing adequate cost-finding systems are to be made in the way of revision in standards, more equitable bases of burden disposition, and short cuts and economies in the operations of the cost systems themselves commensurate with practical results.

2. A Reliable and Effective Budgetary Control System

The word budget is on everyone's tongue. Nations, governments, states, counties, municipalities, towns, corporations, partnerships, individuals, homes and what not, and why not?

Several years ago when budgetary control methods first assumed a certain degree of importance in our own government, various industries embarked upon this program. At about the same time our association, through this committee, issued a publication on this subject. Since that time, many of our manufacturers have installed budgetary control systems, some more complete and effective than others. It, therefore, can safely be said certain progress has been made in this direction by our industry.

There are many manufacturers today who feel that they are operating an effective budgetary control system, but a careful review discloses that what is termed a budget is in reality nothing more than a rough estimate arrived at in a more or less arbitrary manner without sufficient preliminary studies, costs and data and with no periodical and effective basis for future comparison and control.

The real basis for first attempting an effective budgetary control system is the operation of an adequate general accounting system equipped to furnish in sufficient detail the character and intensity of past expenditures, which can be clearly analyzed and intelligently utilized for future periods, and also serve as the effective basis for making comparisons with the new budget.

In the operation of an effective budgetary control system, there is no denying the use of considerable detail. Every dollar spent regardless of its character, is an object of scrutiny and should be considered. Every different phase of expenditure deserves careful study and decision, not only to its extent, but to its existence in the budget.

Your committee strongly recommends more and more emphasis be placed upon the compilation and operation of budgets within the industry, not only on the cost of doing business which most manufacturers are attempting to carefully budget today, but also upon the cost of operating the factory and upon financial budgets picturing monthly the future working capital and cash position of the company. Even assuming that a manufacturer today in operating a fairly satisfactory budgetary control system in co-operation with an effective general accounting system which definitely outlines a comprehensive chart of accounts showing the character and extent of the various classes of expenditures, your committee further contends that in order to prepare the most efficient type of budget, particularly on the cost of doing business, it is absolutely essential to inject into this program a third vital factor termed,

A Dependable Cost Finding System

This third factor shall, of course, be subordinate to, and controlled by the general accounting system.

To illustrate briefly to what extent a dependable cost finding system for the cost of doing business intelligently assists a management in outlining changes in sales policies, and distributing method, revisions in organization, preparing charts, determining ratios of different kinds of expenses to sales dollars, etc., all of which data should first be in the manufacturers' hand before compiling the budget, the following is cited:—

Let it be assumed that a certain manufacturer closed his 1932 fiscal year from an operating standpoint as follows:—

Total gross sales	$2,100,000.00
Less:—Returns and allowances	100,000.00
Total net sales	2,000,000.00
Gross profit—34%	680,000.00
Overhead expenses (cost of doing business)	750,000.00
Net loss	$70,000.00

Going into the 1933 fiscal year, the manufacturer will give a lot of thought to the problematic trend of volume of sales, the gross profit percent and the probable overhead expense or cost of doing business, and lastly, what the final balance will be regarding a net profit or a net loss.

It is realized that a proper and reliable budget of 1933 sales volume at this time is particularly extremely difficult to forecast, due to the downward continuous swing for three successive years and the uncertainty of its more or less sustained continuance for an indefinite period of time. Is it then sufficient to arbitrarily decide that the 1933 sales volume will be off, say twenty percent, for instance, and let it go at that and start to build up the prognosticated 1933 profit and loss statement on that basis?

On returns and allowances, is it simply necessary to say that because the returns and allowances item for 1932 in the above example was 4.76 percent, that it is safe to figure that same percent in 1933?

In connection with the gross profit of thirty-four percent in 1932, is it sufficient to figure out what the estimated savings will be in 1933 in the cost of raw materials and increase the gross profit, say thirty-five percent for 1933?

Relative to the cost of doing business, is it going to be the most intelligent budget to decide upon, say a net profit of $35,000.00 for 1933 and in order to accomplish that goal, reduce the cost of doing business from $750,000.00 in 1932 to $525,011.00 in 1933 and arbitrarily cut each and every item of overhead expense by certain percents and arrive at a condensed prognosticated profit and loss statement for 1933 as follows:—

Total gross sales	$1,680,000.00
Total returns and allowances	79,968.00
Total net sales	1,600,032.00
Gross profit—35%	560,011.00
Overhead expense (cost of doing business)	525,011.00
Net profit	$35,000.00

Your committee feels that while the prognosticated 1933 profit and loss statement as shown above and determined by the associated budgets complied to govern and support the 1933 business as above outlined, is a definite step in the right direction, nevertheless, a much more substantial and safer job can be accomplished by utilizing facts and figures obtained through a thorough analysis of the previous year's business and by the use of a dependable cost finding system of the cost of doing business.

This cost finding system and supporting statistical information will disclose first in relation to gross sales, an analysis of the 1932 volume by types of customers or divisions of sales, and these divisions further supported by the volume of territories, and the territories further supported by the volume of individual accounts, and the individual accounts further supported by facts and figures showing those which have become extinct during the year through bad debt losses, or minimized in volume by credit restrictions, elimination of certain lines of goods, overstocks, etc., or increased in volume by the addition of new lines, low stocks, special jobs, etc.

An intensive analysis and cost finding system will disclose the percent of gross profit by divisions of sales, by territories, by individual accounts and, if necessary, by lines of goods and individual products. It will disclose those territories operating at a loss instead of a profit and furnish the basis of territory eliminations or possible territory consolidations.

Budget is Factor of Safety

With all these facts in possession of the manufacturer, even though on top of it al, it becomes necessary to make a more or less arbitrary decision as to the problematic figure to use as a sales decrease factor, it is realized that a budget of gross sales so set up will contain a more reliable factor of safety than to simply guess at the 1933 volume.

The same method of analysis as the result of proper statistics and a cost finding system, will disclose the extent and effect of returned goods, freight allowed, and other miscellaneous allowances by divisions of sales territories, individual accounts, etc.

In a similar manner, proper statistics and the cost finding system of the cost of doing business will disclose for the 1932 fiscal year how warehouse, shipping and cartage expense has been incurred by divisions of sales, various territories, individual accounts, lines of goods, individual orders, etc., and will furnish an intelligent basis of setting up the 1933 budget.

Along similar lines, a corresponding analysis of advertising and sales promotional expenses, selling expense, and general and administrative expenses can be secured along the same lines as explained in the previous paragraph. All this will give the manufacturer the vital facts to intelligently compile his 1933 budget and prognosticated profit and loss statement.

Practically every manufacturer maintains, in addition to his general accounting procedure, certain types of statistics and subsidiary records more or less in control with the general accounts in the ledger. These statistics and records include analyses of such subjects as sales, returned goods, freight allowed, miscellaneous allowances, cost of sales, advertising expense distribution, selling expense distribution, etc. In other words, every manufacturer does to some extent attempt to analyze the cost of doing business by various phases of classification, so that certain expenses of maintaining a dependable cost system for the cost of doing business are now being incurred. The point is brought out here that most manufacturers, with slight additional expenses, over and above what is now being spent on accumulating valuable data, would be in a position to operate a dependable cost system for the cost of doing business.

As to the yearly expense of maintaining such a system, the amount in each case will depend upon the extent of analyses to be made and the degree of refinement of the information to be obtained.

There are certain main items of the cost of doing business in every manufacturer's profit and loss statement which brings to his mind questions of this character:—

(a) What percent to net sales should be my selling expense of salesmen's salaries, commissions, traveling expenses and bonuses? What percent of net sales maintains on this item of expense with my leading competitors?

(b) What percent to net sales should be my advertising and sales promotion expense?

(c) What are my leading competitors spending in percent in this respect?

(d) What are other closely allied industries doing in this respect?

Cost of Doing Business

As far back as 1928, your cost accounting committee in its annual printed report pointed out the fact that on a dollar of sale, the cost of doing business was a great deal more than the manufacturing cost, and in many companies is two or three times as much and that due to the keen struggle for greater sales volume, particularly in distant markets, your committee asked the question:—"Isn't now a pretty good time for our industry, as an industry, to consider the matter of the cost of doing business and the cost of selling the products of this industry to the American people?"

In the days of easy selling, it is natural for most industries to adopt wasteful methods, which are going to be hopelessly inadequate in the day of chain store and mail order competition, which is fast approaching. How are we going to meet this tremendous competition? We must meet it or go out of business. We must merchandise.

It is our conclusion, however, that the increased growth of the many-sided competition for the customers' dollar is going to force paint and varnish manufacturers' as it will force manufacturers in many other industries, to revamp not only their manufacturing methods, but also their sales and distributing methods.

In the report of your committee to the association as of October 13, 1930, the subject of the cost of doing business and a suggested general method of its analyses was given considerable detail and emphasis. The fact is the report in its entirety dealt with this subject.

Early this fall, S. L. Kedzierski of the costs and operations analysis section, merchandising research, division of the Departmentof Commerce, Washington, D. C., submitted to Mr. Horgan, general manager of our association, an eighty-page report on the subject of "Practical Applications of Cost Accounting in Paint Distribution."

This report was referred to the chairman of your cost accounting committee for his comments. In this connection, it was indicated that the report, while very general in its major portion of its references and explanation to certain phases of the cost of doing business, nevertheless, contained some valuable information. When printed and circularized, it will no doubt be read with much interest and utilized to some advantage by various members of our association. This general report, apparently intentionally limited in its initial scope, did not go far enough in its research, both as regards the number of representative manufacturers contacted within the industry, as well as the character, ratio, and basis of application of the various important classes of expenditures and sales allowances in relation to total sales, various divisions of sales, sales territories, sales products, etc. Neither did it attempt to outline concretely a working costfinding system for the cost of doing business in the paint and varnish industry.

It was further suggested by the chairman of your cost accounting committee that if the Department of Commerce could supplement the general report recently compiled on the cost of doing business in the paint and varnish industry by a more representative and thorough report in the near future, indicating representative minimum and maximum fluctuations and average ratios in percent to the sales dollar of the various items of returns and allowances and major overhead expense classifications as hereinbefore cited, together with concrete recommendations of practical and comparatively inexpensive methods for determining the cost of doing business, the proper ground work will have been established for keener interest in this vital subject and a desire created on the part of every manufacturer to tackle vigorously the question of an intelligent reduction of the distribution costs in our industry.

Governmental Co-operation

Mr. Kedzierski's reaction to the above indicated comments can best be shown by quoting his letter of October 17, 1932, as follows:—

Dear Mr. Stephen:—Mr. Horgan, general manager of the American Paint & Varnish Manufacturers' Association, has forwarded to me a copy of your letter of September 26, addressed to him and rendering your valuable and much appreciated comments on "Practical Application of Cost Accounting in Paint Distribution," which is now being prepared for publication.

I have gone over your comments very carefully and found them very instructive. It is felt that some mutual arrangements can be made whereby a supplemental study, as referred to in your letter, can be made by the bureau in the paint industry in collaboration with the cost accounting committee of your association.

It is suggested that since you will be in Washington about the middle of November in connection with the paint manufacturers' convention, that arrangements could be made for a meeting with the bureau officials to discuss further the possibility of such a survey, as well as under what conditions it can be made. Mr. Alderson, who is directly in charge of all distribution cost studies assures me that both Doctor Surface and Mr. Dunn are very enthusiastic over the possibility of making a study in your industry along the lines indicated in your letter to Mr. Horgan.

It may be of some interest to you to know that the bureau has just recently completed a survey for the confectionery manufacturers pertaining to distribution. First, a study was made of the various markets disclosing potentials as well as type of candy sold and the type of outlets through whicr it was distributed. This was done on a nationwide basis. Second, the survey of distribution costs was made of representative candy manufacturers to show not only profitable or unprofitable territories, but also the influence multiplicity of items has on profit. After the completion of this study a report was presented to the candy manufacturers at their convention, where it was unanimously accepted. Subsequently, the candy manufacturers, through their association, requested the bureau to apply the results found in this cost study to each candy plant in the United States so that everyone would benefit from the facts found in the survey. This was done as follows:—A group of candy manufacturers were invited by their local secretaries for a group discussion meeting, where the major problems were thrashed out. Following each meeting, aid was given to each manufacturer in installing a cost accounting system for distribution along the lines designed in the bulletin published for their trade, a copy of which is inclosed herein.

Since the technique of the collection of the data was rather simple, as it required little more than half the time of one clerk who was supplied by each firm to tabulate its information, the expenditure was nominal when consideration was given to the benefits derived from such a survey. In no instance did these manufacturers encounter any unusual expenditures for such a study except for the small amount of travel done by the specialists in charge of the survey whose expenses were defrayed by the association.

If there is any point you would like to have further elaborated before you come to Washington to attend the convention here, do not hesitate to write us.

Considering the vital part the cost of doing business assumes in the sales dollar of the paint and varnish industry, the ramifications of distribution found by every manufacturer in his various outlets

of sales, the competitive trends of business and business conditions today, the necessity of more intelligent management in profitable distribution, and the realization of most members of the association of the necessity of constructive work along these lines, it appears advisable for the association to co-operate with the Department of Commerce in making a comprehensive study of this subject.

Comprehensive Survey Suggested

Your committee feels that a thorough survey can be made and in a strict confidential manner, so that the valuable information obtained by the Department of Commerce's contact with individual manufacturer's balance sheets, operating statements and statistics can be incorporated in printed publications in percents, etc., so as not to develop the identity of any manufacturer, and, furthermore, that no information may be used illegitimately in a competitive way.

It is further felt, and your committee so recommends, that the association cooperate with the Department of Commerce in making this survey, and that the cost accounting committee with the proper representatives of the Department of Commerce, meet at an early date to outline the manner of conducting this survey, together with an agreement as to the character of information to be secured, final recommendations to be made, and the issuance of the printed publication on this subject.

It is sincerey expected that if the above recommendations are approved, one of the most constructive, as well as of the most valuable contributions will have been made to our industry.

Other Reports

Tung Oil

The brief report of the tung oil committee stated that 1932 had witnessed the continued effort to establish tung oil production in many countries other than China, and gave figures on acreage in the United States, which figures have been previously published in the Oil, Paint and Drug Reporter. Although production has decreased in keeping with curtailed operations of industry, much data of value with respect to seed and soil selection has been collected, to the end that planters will be benefited when time comes for larger production.

"With any substantial upturn in business," said the report, "it is expected that the demand for tung oil will increase, and it is hoped that the efforts of your commttee to develop a domestic source of supply will not be relaxed."

Lacquer and Synthetic Gum Products

This committee reported that in the past year it had followed three different lines of endeavor:—

1. To help straighten out a situation in regard to the policy of certain manufacturers of raw materials who have been offering intermediate products direct to our customers.
2. The question was raised as to the advisability of each individual manufacturer protecting himself by the use of stickers or labels on containers advising caution against fire hazards in the use of lacquers.
3. Consultation among our members and with the National Council of Compensation Insurance looking toward a reclassification of the rates of compensation insurance in the lacquer industry that would, we believe, more fairly represent the hazards of that industry.

Membership

For the fiscal year ended September 30, 1932, loss through resignation in the membership of the manufacturers' association was fifteen, according to the report of the membership committee, and four have been dropped, a total of nineteen. During the same period, five new members have been admitted, as follows:—

Brevolite Lacquer Company, North Chicago, Ill.
Edmonton Paint & Glass Company, Ltd., Edmonton, Alberta.
Egyptian Lacquer Manufacturing Company, New York.
Irvington Varnish and Insulator Company, Irvington, N. J.
Harry G. Sargent Paint Company, Indianapolis, Ind.

Through a provision of a resolution adopted a year ago that subsidiaries may be listed as well as parent companies on payment of dues, fourteen subsidiaries are now on the active rolls and this fact equalizes the losses, and the membership now stands at 205, the same as a year ago.

The committee expressed gratification at the situation and foresaw an increase with returning business.

Naval Stores and Petroleum Products

The committee on this subject had little to report, in view of which fact it expressed the query as to whether matters usually referred to it could not be handled as well by some other standing committee.

The convention of the manufacturers' association was declared adjourned at quarter past one o'clock, and in the afternoon the members met in joint session with the National Paint, Oil and Varnish Association, as reported elsewhere in this issue.

The First Paint Industries Show

The first Paint Industries Show to be held in conjunction with the sessions of the Federation of Paint and Varnish Production Clubs was staged in the Italian Garden and the Jefferson room of the Mayflower Hotel November 11, 12, and 13, and was generally voted a real success, both by the technical men of the clubs and by the exhibitors. The show was designed to present a visualization of materials, equipment, and ideas vital to the producing end of the paint and varnish industry. It was arranged by a committee consisting of F. C. Atwood, chairman; C. W. Clark, E. J. Cole, George B. Heckel, Edward F. Maloney and Gordon C. McEwen.

All of the exhibits were of an educational value and favorable comment heard seems to indicate that the show will be a feature of the production clubs' annual meetings. Mr. Atwood reported on the success of the venture to the sessions of the American Paint and Varnish Manufacturers' Association, stressing the importance of thus presenting standard and specialty materials and equipment.

A review of the various exhibits is given herewith:—

American Cyanimid & Chemical Corporation

On display were synthetic resins, ester gums, natural gums, chemical driers, metallic soaps, pigments, and chemicals. One of the most interesting panels in this exhibit showed comparisons between spar varnish and clear rezyl lacquer after a seven months' natural weathering test. Another panel showed the tests of commercial glyptal house paints. There was another panel showing the durability of rezyl paint number 8 after a year's exposure in Florida, and others showing comparisons between glyptol resin of kauri reduction value and commercial outdoor spar varnishes. Another panel of interest showed comparisons between synthetic freight car paint with regular oil freight car paint after a fifteen months' exposure test.

J. McE. Sanderson was in charge, with W. B. Lambert assisting him.

American Zinc Institute

In this exhibit were shown lithopones, zinc oxides, titanated lithopone, high zinc sulpnide pigment and zinc sulphide. On the walls were charts showing light-reflection values of various colors and photographs of the application of zinc base paints; also, photographs of the use of color on machinery. Listed as manufacturers of zinc pigments were the American Zinc, Lead & Smelting Company, Chemical & Pigment Company, Eagle-Picher Lead Company, International Lead Refining Company, Krebs Pigment & Color Company, New Jersey Zinc Company, Ozark Smelting & Mining Company, St. Joseph Lead Company, and United Color & Pigment Company.

Julian D. Conover, secretary of the institute, was in charge.

American Gum Importers' Association

Compact, colorful and educational was the exhibit of the gum importers. Natural gums were displayed in open boxes, instead of jars, and some were so pure and brilliant that they gave the impression of being precious stones, not commercial raw materials. An effective pictorial device was the use of a world map, with ribbons extending from points of the globe where the product was secured to the box containing it. Among the natural gums shown were:—genuine bold pontianak, DBB soluble copal chips, No. 1 brown kauri, standard Batavia gum dammar, hard dark amber Congo and Macassar gum Loba B. Pamphlets were distributed explaining the properties of these and other gums.

Chester H. Allen, chief chemist for the association, was in charge.

Anderson-Prichard Oil Company

Great panoramic oil field views, scenes of burning wells, ice covered derricks and night drilling lent colorful background to the exhibit of the Anderson-Prichard Oil Company, which dealt primarily with displays of troluloil and apcothinner. Panels showed comparative uses of these products. Also in the exhibit were samples of Wilcox and Simpson sands.

C. H. Dresser, director in charge of industrial naphtha sales, was in charge, assisted by Dr. J. K. Stewart, research director.

Carborundum Company

Featured in the exhibit of the Carborundum Company was a display of Aloxite brand wheels. Samples of a variety of abrasive products were distributed to visitors.

Commercial Solvents Corporation

The booth of this company was headquarters for the distribution of interesting brochures of data on various liquid ingredients of lacquer, giving tables of the physical properties of various solvents, diluents and plasticizers; also on all of the products of the Commercial Solvents Corporation.

Hercules Powder Company

Two motion pictures, one the story of nitrocellulose and the other concerning the doings of our old friends, Turp and Pine, were on display continuously in the Hercules Powder Company exhibit in the Jefferson room, together with a wealth of naval stores products, such as steam-distilled wood turpentine, Herco steam-distilled pine oil, Solvenol No. 1, Dipentene No. 122, Hercosol No. 5, Hercosol No. 80, Abalyn, Hercolyn, distilled dipolymer, Vinsel No. 1, Vinsol No. 2, rosin residue, both sticky and oily, commercial abietic acid, Hercules wood rosins and the new pale rosins.

Among those at the booth were C. E. Kinney, manager of the technical service, naval stores department; H. W. Klinger, manager of the technical service of the cellulose products department, and J. M. Schantz and J. B. Wiesel.

Lead Industries

This was a highly artistic exhibit, displaying samples of all commercial lead pigments against a background linking the pyramids of 2500 B. C. to the skyscrapers of New York of 1932. There were on display samples of basic carbonate white lead, white basic lead sulphate, white lead, litharge, red lead, blue basic lead sulphate, orange mineral, light chrome green, medium chrome green, dark chrome green, lemon chrome yellow, orange chrome yellow and basic lead chromate. Listed as manufactures of pigment were the Anaconda Lead Products Company, Andrews Lead Company, Eagle-Picher Lead Company, Euston Lead Company, John T. Lewis & Bro. Company, Metals Refining Company, National Lead Company and Sherwin-Williams Company.

F. E. Wormser, secretary of the association, was in charge.

John D. Lewis, Inc.

The John D. Lewis company had an exhibit in the Jefferson room of gums, ester gums and resins.

James H. Matthews & Co.

The new can lid marking machine, featuring speed and safety, was displayed at the Matthews booth. It is for use in embossing color formula numbers, dates and other code indications. Also on display was a foot press can lid embossing machine recommended where quantity production is not essential. Other machines for stamping and for printing on the sides of round and flat paint and varnish cans were on view. A handsomely illustrated folder of the new rotary machine was distributed.

R. E. Ginn was in charge.

J. Meyer & Sons

This exhibit had an advantageous position near the desk of the presiding officers in the Italian Garden. It was devoted to raw materials for the paint, varnish, lacquer, printing ink, oilcloth and linoleum industries. Metallic diers and varnish gums were especially featured.

Fred L. Meyer was in charge.

Nuodex Products, Inc.

In presenting Nuodex metals, this exhibit featured an illuminated color chart showing not only the variegated colors possessed by the organic salts, but illustrating their clarity, solubility and stability in mineral spirits.

Resinous Products & Chemical Company

Great interest was displayed in the oilsolate driers displayed in this exhibit. These comprise a new line of extremely soluble and light colored driers. Also on display were amberols and paraplex, and exhibits of quick drying house paints, and material for automobiles, aeroplanes, refrigerators, artificial tile, and furniture. Coated oil cloth and rubberized fabrics also were shown.

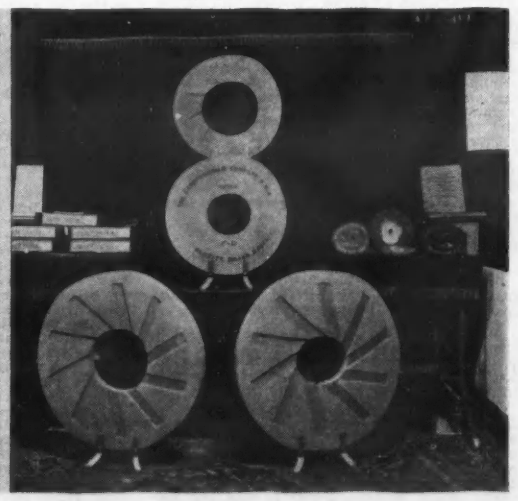
C. L. Came was in charge.

Scientific Section

The Scientific Section of the Educational Bureau of the paint and var-

(Continued on page 49)

Lead Industries Association



Carborundum Company

Exhibits at First Paint Industries Show

PROCEEDINGS OF THE

Federation of Paint and Varnish Production Clubs

ELEVENTH ANNUAL MEETING

Washington, D. C., November 11 and 12, 1932

The Federation of Paint and Varnish Production Clubs held its eleventh annual convention November 11 and 12 in the Garden Room of the Mayflower Hotel, Washington, under the chairmanship of James E. Kortum, St. Louis, president. About 130 members of constituent clubs were registered and participated in discussion of sixteen original papers on a variety of technical subjects.

These officers were elected for the coming year:—

President, E. E. Sparrow, of the Imperial Varnish & Color Works, Toronto, Ontario.

Vice-president, F. C. Atwood, of the Craftex Company, Boston.

Secretary, George B. Heckel, Philadelphia.

Treasurer, Roy B. Anderson, of the Brooklyn Varnish Company, Brooklyn.

Members of the executive committee, F. L. Theurer, Pittsburgh Plate Glass Company, Chicago; E. V. Ladd, of the Densol Paint Company, Cleveland; and F. A. Wertz, of the Varcraft Works, Pottstown, Pa.

As a new feature of the federation sessions, a Paint Industries Show was held during the two days, containing on through Sunday, November 13. The exhibits which were arranged around the walls of the Garden Room proved of great interest and practical value.

Friday, November 11

Opening Session, Friday Forenoon

After calling the convention to order, James E. Kortum, president, gave his annual address, reviewing the progress of the year which had brought an increase in membership, a healthy financial condition, a new set-up for the publication of the official digest and plans for the inauguration of the Paint Industries Show.

George B. Heckel, secretary, in his report listed the individual memberships in clubs at 785, the associate memberships at 64, and the subscribing memberships at 41, a total of 890, compared with an aggregate of 749 for the previous year. He also reported that a new club, that in Baltimore, had been established at a meeting October 7.

Roy B. Anderson, treasurer, showed by charts the income and expenditures of the federation and indicated a satisfactory financial condition.

Committee Reports

Memorials

Following the report of the memorial committee, consisting of W. P. Werner, chairman; George B. Heckel, and E. W. Fasig, the federation members stood in silent tribute to the memory of these men who died during the year:

Frank C. Doyle, secretary of the Steelcote Manufacturing Company, member of the St. Louis club.

N. J. Carow, Devoe & Raynolds Company, member of the Chicago club.

Douglas S. Smyth, vice-president and factory manager, Gilbert Spruance Company, member of the Philadelphia club.

H. E. Bishop, superintendent of Standard Paint and Varnish Company, Windsor, Ont., member of the Detroit club.

George Raum, Wilson Paint Company, member of the Cincinnati-Dayton-Indianapolis club.

Plant Managers

E. E. Sparrow next presented the report of the plant managers committee, which recommended that a committee be appointed to follow up the work of devising a standard method for reading exposure tests and application of materials, as suggested previously by the New York club.

Another report of the morning session was on behalf of the cost accounting committee, given by R. C. Stark, who dwelt on the subject of the great disparity in bids by various manufacturers, the wide and almost unbelievable range of which, he said, was bad for the industry. He cited examples to prove his point. For instance, a government department had asked for bids on a certain quantity of standard specification spar varnish, delivered in standard containers at a given point. Twenty-seven bids were received, ranging from a low of 31.8 cents per gallon to $1.15. Such a spread between bids for the identic type of material, said the speaker, certainly reflected on the industry. He also cited another range for a given lot from a low of $3,912.50 to $13,600 for the high bidder, and several more bids were of similar disproportion. The point of his address was that the responsible executives of any company should know what it cost to produce and sell merchandise at a profit; he regretted the practice of competitive bidding which had no relation to costs.

E. J. Cole, of the contact committee, organized to bring about closer relationship between the production clubs and the manufacturers' association, reported that the committee had done nothing because there was nothing to do and he saw no reason for the continuation of the group.

Dry Color Specifications

A. E. Stauderman, chairman of the dry color committee, consisting of S. Bonnie, A. F. Brown, F. P. Ingalls, E. W. Fasig, E. E. Sparrow, L. M. Larson, submitted the following report:—

James E. Kortum
The Presiding Officer

Two years ago at the Toronto convention a suggestion was made to the federation of the need of some standard method for testing dry color shipments. It was felt that if some definite and complete method could be adopted by the dry color and paint trade a great deal of the uncertainty, dissatisfaction and misunderstanding surrounding shipments would be eliminated.

The committee appointed consists of representatives of the dry color, paint and printing ink industries, and it is my hope that similar representation will always be maintained because of the co-ordination and co-operation possible between these groups.

A tentative specification for the testing of dry color shipments was drawn up which includes:—

1st—A list of the apparatus and materials used.

2nd—Explanation and description of the above.

3rd—Method of making tests.

4th—Rub-out Guide, showing amounts of color and oil, number of mull-strokes and reduction of tinting proportions.

We endeavored to make the specification clear, complete and as brief as possible, one that could be followed by maker and user, employing for the most part methods now in common use.

In June of this year approximately one thousand copies of the specifications were sent to the presidents of the constituent clubs of the federation for distribution among the members. Owing to the fact that the specification so definitely affects every paint manufacturer it was considered advisable for the entire club to consider the question rather than to have it referred to the local club's dry color committee. The various presidents were so that these instructions were followed very well. Record of some of the local club's instructed, and it is gratifying to note discussions are to be found in the minutes recorded in the official digest.

Although we did not demand an answer, we requested the club to report their reactions in order that we might know the consensus of opinion among the trade and so report to the federation at this convention. To date replies have been received from ten clubs; some acecpt it as it was first written, others suggest slight changes, while one club rejected the proposal completely. This club, because of the reasons given for rejection, has been asked to reconsider their decision.

Many companies both in and out of the federation have declared in favor of such a specification.

Color Men Favor Specification

One hundred copies were distributed among the members of the dry color association through its secretary, Mr. McCorkle. We learn from that organization that its members seem to be in favor of the specification as it stands. A few minor changes have been suggested, some of which have already been made in the revised specification. They will await the federation's action before voting for its adoption, however.

The specification was published in the June issue of the official digest, but the committee decided not to release the paper for general publication in trade magazines until such time as the local clubs had opportunity to comment upon it.

Due to some worthwhile suggestions from the various clubs, it was decided to make several slight corrections, mainly in the Rub-Out Scheme, and on November 1 the revised specification was issued for publication to the following magazines:—Oil, Paint and Drug Reporter, American Paint Journal, Oils, Paint and Chemical Review, Drugs, Oils and Paints, Paint and Varnish Production Manager, American Ink Maker, Canadian Paint and Varnish Magazine.

Copies have also been sent to Dr. Krumbhaar of Berlin and to the Board of Trade for German and American Commerce for publication. Copies have been sent to Committee D-1 of the ASTM, and to the paint section of the A. C. S. for consideration.

Owing to the general acceptance of this specification to the trade at large, the dry color committee feels that their work on this subject is completed and therefore present the revised specification to the federation for adoption. The chairman of this committee wishes to thank the local club presidents and the entire membership for their assistance and suggestions. He is also anxious to acknowledge the splendid work of every man of this committee, without whose cooperation this work could not have been finished.

The Specification

Apparatus and Materials

1. Oil—White refined linseed oil (acid number approximately 4).
2. Balance—Regulation laboratory balance.
3. Bruette—Accurate one cubic centimeter, burette, graduated in tenths of a cubic centimeter, or the apparatus known as the brown bruette.
4. Muller—To have rubbing face of from 2¾ in. to 3 in. Face to be free from blowholes and flaws.
5. Rubbing surface—To be lithographer's stone or polished plate glass slab, that has been ground to a satin finish with a muller and fine emery flour wet with kerosene.
6. Tinting and strength tests—(a) A standard zinc oxide paste in oil in tubes for colored pigments; (b) A standard ultramarine blue paste in oil in tubes for white pigments.
7. Balanced watch glasses or counterbalanced weighing pans.
8. Flexible spatula for mixing oil and pigments (3 in. blade).
9. French scraper or body glaze scraper—with true edge (3 in. to 4 in. wide).
10. Bright tin panels or clear glass slides (for exhibition of color daubs).

Explanation

1. White refined linseed oil with an acid number of approximately 4 is generally acceptable for white and colored pigments. Some pigments, particularly earth colors, have a slightly greater tendency to flood in refined oil than when mulled in raw linseed oil. The use of two rather similar oils would call for additional equipment and be the possible source of error, so for simplicity we suggest the general use of refined linseed oil. It is necessary, therefore that all colors should be examined immediately after having been placed on slides. Oil should be changed frequently. The use of bodied oils or varnish is essential for some trades. This point is one that should be arranged for between the individual buyer and seller.

2. Balance—Should be the regulation laboratory balance, sensitive enough to be accurate to two decimal places. To be used in weighing dry pigemnt, oil and reduction or tinting pastes.

3. Burettes—Should be either standard one cubic centimeter burettes, graduated in tenths of a cubic centimeter (pet-cock controlled), or the apparatus known as the brown burette, which consists of a small reservoir to supply the burette. This burette is graduated in tenths of a cubic centimeter and is stop-cock controlled. The tips of all burettes should be ground optically flat. No droppers or weighing bottles should be used.

4. Mullers—Should be of the standard type on the market, with a grinding face of from 2¾ in. to 3 in. diameter. The face should be free from blow-holes and other imperfections. The use of "weighted" mullers is not recommended.

5. Rubbing surfaces—Should be lithographer's stones or ground plate glass slabs, the surface of which are kept sharp by sand-blasting when necessary. Different slabs or stones should be available for red, yellow, blue, green, black and white, it at all possible, to guard against contamination.

6. (a) Tinting and strength tests should be made using (a) zinc oil paste for colors. Recommended formulae for white zinc paste:— Either:—

1. 300 pounds green seal zinc oxide, 64 pounds poppy oil, 2 pounds calcium stearate, 1 pound turpentine.

Ground fine and placed in small collapsible tubes.

This formula yields a short paste, handy to use and which has little tendency to settle. Or—

2. 90 pounds green seal zinc oxide, 10 pounds refined linseed oil, 1 pound 4-hour cooked linseed oil (560F).

Mixture placed in tubes.

This formula yields a paste, that is slightly stringier than No. 1 and settles very little.

Some manufacturers prefer the use of zinc oxide ground in "O" or "OOO" lithographic oil.

6. (b) Tinting and strength tests for white pigments—Should be made using (b) a blue paste in oil. Recommended formulae for the blue paste:— Either:—

1. 140 pounds ultramarine blue, 50 pounds poppy oil, 3 pounds calcium stearate, 2 pounds castile soap, ½ pound turpentine.

Ground fine and place in small collapsible tubes.

This formula yields a short paste, handy to use and which has little tendency to settle. Or

2. 70 pounds ultramarine blue, 27 pounds refined linseed oil, 3 pounds 4-hour cooked linseed oil (560F).

This formula yields a paste that is slightly stringier than No. 1 blue formula.

When rubbing the tinting tests or strength determinations dry blue or dry white pigment should not be added to a mul'ed sample under examination, as this calls for additional mulling, to incorporate the tinting pigment. The objections to this method of procedure are as follows:—

First—A waste of time and energy.

Second—Additional mulling may develop color that is unobtainable in the plant.

Third—This is contrary to general plant practice of tinting.

It is also considered a waste of time to weigh up and rub out portions of the contrasting dry pigments—for instance, a dry sample of a white shipment and dry blue. The white has already been rubbed up for shade and is available on the slab in paste form for tinting purposes. Then again the hardness of each pigment must be considered when dispersing color.

7. Balanced watch-glasses or counterbalanced weighing pans—Should be used in weighing out the samples of dry colors, oils and pastes. For regular control work we recommend the use of the burette in measuring the oil used instead of the scale because of the simplicity, speed and tolerant accuracy of the burette. In case of doubt and dispute over any color, all portions should be weighed.

8. Flexible spatula for mixing oil and pigment—Should have a three-inch blade.

9. French scraper or body glazing scraper—Should be used in smoothing down the color daubs that are placed on the glass or tin, so that both shipment and standard are seen on the same plane. Scraper should have a blade that is about 3 in. or 4 in. wide with a good straight edge.

10. Bright tin or clear glass panels—Should be used for observing color matches. If glass is used rub-outs should be observed from the top and not through the glass for we are interested mainly in how colors look on top. Looking at the under side of rub-outs on a glass panel is useful if properly interpreted. It should not permit to modify one's judgment of a color as made from the top side.

Method for Rubbing Out Pigments

Carefully weigh out sample of pigment to be tested and counterbalance with the standard sample. If oil is to be weighed, add oil to the dry samples accurately Transfer the mass to the rubbing slab. If oil is to be measured, transfer weighed samples of the pigments to the slab and add oil by dropping (slowly) from the burette, working up paste with the small spatula all the while. Be sure to allow enough time for burette to drain to its true level.

When all dry pigment is worked up by means of spatula, the mass should then be mulled. The stoke should be from 3 to 4 inches wide and from 12 to 15 inches in length. In counting rubs given a color, one stroke up and one stroke back is considered *one rub—not two rubs.* Muller

should be allowed to travel up one side and back the other side, twistnig muller slightly at the top and bottom of each half stroke to help work the pigment in.

A pigment demanding 300 rubs shall be "picked-up" after each 50 rubs.

A pigment demanding 200 rubs shall be "picked-up" after each 40 rubs.

A pigment demanding 100 rubs shall be "picked-up" after each 25 rubs.

A pigment demanding 50 rubs shall be "picked-up" after each 15 rubs.

By "picking-up" we mean that face of muller shall be scraped with the spatula and the paste on slab gathered up in a daub once again. Then mulling is started once more.

When mulling is completed, shipment and standard samples are placed in juxtaposition on a clean piece of bright tin or clear glass. Daub shall be about two inches long and at least an inch wide. The French scraper shall be lightly drawn down over the pastes to even off the ridge and so present both daubs on an even plane. Mass tone should be judged immediately. Observation for floating, bronzing, etc., should be taken note of after two or three hours, if this fact is important to the consuuner.

Tinting value or reduction should be run as follows:—Weigh up the required amount of the mulled paste from slab and counterbalance with the standard sample. Then add the correct amount of the "reduction paste" to shipment and counterbalance. Next thoroughly mix the pastes on the watch glass or weighing pan and transfer samples to the slab—mixing them thoroughly with spatula only, till no more streaking is noticeable.

Transfer samples to the tin or glass, placing them in juxtaposition, daub being two inches long and at least an inch wide. Smooth down with the French scraper and judge color immediately.

Strength tests shall be made in a similar maner to the reduction test except amounts of reduction pastes or mulled pastes of shipment are regulated as is necessary.

. Pigment Rub-Out Scheme

Color or class.	Grams of color.	C.C. of oil.	Mulls or rubs.	Reduction—grams of reduction paste to grams of mulled paste.
C.P. iron blues....	1.0	0.80	300	5 — .1
C.P. light and medium para toners..	0.5	0.80	200	5 — .1
C.P. dark para toners	0.6	0.80	300	5 — .1
10% para toners on whiting	1.0	0.50	50	2 — .1
C.P. toluidine.....	0.5	0.50	150	5 — .1
C.P. light chrome green	1.0	0.40	100	2 — .1
C.P. med. chrome green	1.0	0.50	150	2 — .1
C.P. deep chrome green	1.0	0.60	200	2 — .1
25% grinder's green light	1.0	0.30	50	2 — .1
25% grinder's green medium	1.0	0.40	50	2 — .1
25% grinder's green deep	1.0	0.40	75	2 — .1
C.P. chromium oxide	2.0	0.40	50	2 — .1
C.P. primrose chrome yellow....	1.0	0.20	50	2 — .1
C.P. light chrome yellow	1.0	0.50	50	2 — .1
C.P. med. chrome yellow	1.0	0.30	50	2 — .1
C.P. dark chrome yellow	2.0	0.40	50	2 — .1
C.P. zinc yellow...	1.0	0.40	50	2 — .1
English vermil.....	2.0	0.50	100	2 — .1
Ultramarine blue...	1.0	0.50	150	2 — .1
Cobalt blue.....	1.0	0.50	150	2 — .1
High strength carbon black.....	0.3	2.80	150	2 — .1
Bone black.....	1.0	0.80	100	2 — .1
Lamp black.....	0.3	1.00	100	2 — .1
Carbon black.....	0.3	1.30	150	2 — .1
Ferrite yellow.....	0.5	0.30	150	2 — .1
French yellow ocher	1.0	0.50	150	2 — .1
Indian, spanish, venetian, persian and light red oxides	2.0	0.60	150	2 — .1
Raw and bt. sienna	1.0	0.60	200	2 — .1
Raw and bt. umber	1.0	0.80	200	2 — .1
White leads.....	2.0	0.40	100	.1 — 4
Zinc oxides.....	2.0	0.60	100	.1 — 4
35% leaded zinc....	2.0	0.40	100	.1 — 4
Titanox	2.0	0.50	100	.1 — 4
Titanium dioxide...	2.0	0.90	100	.1 — 2
Crytone	2.0	0.50	100	.1 — 4
Lithopones.....	2.0	0.50	100	.1 — 4
Zinc sulphide.....	2.0	0.60	100	.1 — 2

(for whites use ultramarine blue reduction paste.)

Note 1.—Because of the difference in oil absorption of similar pigments made by different manufacturers, the pigment rub-out scheme can necessarily serve only as a guide in the work, and is attached to the tentative specification for operator's convenience.

Note 2.—In many cases, the paint manufacturer producing industrial, freight car, marine, barn or anti-corrosive paints, is interested in wetting the pigment with the vehicle. Such methods of grinding in oil do not reduce the particle size or develop additional tinctorial value of the pigment. The covering power of such paints is therefore dependent upon the degree to which the color manufacturer develops the pigment used in such products.

The muller tests do not determine the true value of colors for this purpose. The grinding action of the muller develops the tinctorial value and hiding power of the pigment to a much greater extent than when the pigment is ground in oil on a loosely set stone mill. Comparative muller and stone grinding tests show that fifty mulls with no weight on the muller are equivalent to a loose grind on a paint mill in which the pigment is thoroughly wetted. It is recommended that this test be used in determining the true value of these pigments for paints wherein the pigment receives little or no grinding in the paint mill.

Submitted for the consideration of the paint and dry color manufacturers of the United States and Canada, by the Dry Color Committee of the Federation of Paint and Varnish Production Clubs.

Report Adopted

On motion the specifications were adopted and the committee retained.

At the conclusion of the first session brief reports of the condition and activities of the various clubs were presented by delegates. Mr. Heckel read a letter from P. D. Buckminster, a former president of the federation, now in California, and a cablegram from Dr. Wilhelm Krumbhaar, of Germany, expressing regrets at their inability to attend. Mr. Heckel was instructed by vote of the convention to send appropriate responses. H. A. Derr, of the Marietta Paint & Color Company, spoke on behalf of the associate members, and the morning session then adjourned.

Second Session, Friday Afternoon

Election of officers followed the report of the nominating committee as the first order of business of Friday afternoon's session.

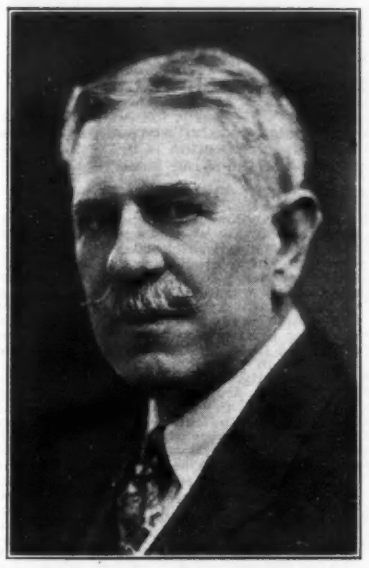
In the absence of John C. Gehant, Duluth, chairman of the program committee, V. C. Bidlack, Montreal, took the chair, and the presentation of original papers by constituent clubs was begun.

California Club

No delegate being present, the paper of the California Club was read by E. E. Sparrow, and was as follows:—

Effect of Synthetic Resins and Pigments on Drier Absorption and Viscosity

The California Paint Superintendents' Club undertook to investigate the difference in drying and viscosity when synthetic resin vehicles and pigments were compounded together to produce quick-



George B. Heckel
Secretary of the Federation

drying paints. We hoped to arrive at some definite conclusion by the end of this year, which would benefit the club as a whole. But we realized the wide scope of such work and knew that our problem would not be completed until two or more years had elapsed—if all pigments and resins on the market were used. We therefore selected pigments and synthetic resins which were actually in use by Pacific Coast manufacturers at the time this problem was selected.

Through a questionnaire given to the members of the club, the technical committee was able to select the following pigments and resins:—

1. Titanium dioxide.
2. Titanox B.
3. Titanox C
4. Lithopone.
5. Chrome yellow medium.
6. Venetian red (30% Fe_2O_3).
7. Toluidine toner.
8. Prussian blue.
9. Carbon black.
A. Ester gum.
B. Paranol, ex. hd. No. 1.
C. Amberol F/7 Lt.
D. Bakelite XR-254.
E. Rezyl 110.
F. Amberol 226.

The ester gum, paranol, amberol F/7, and rezyl 110 varnishes were made by the following formulæ, except with a change of heat in a few instances in order to control viscosity:—

100 pounds resin.
20 gallons wood oil.
7½ gallons, 2-hour linseed oil.
60 gallons mineral thinner.
2½ gallons liquid lead drier.
7½ pints liquid cobalt drier.

Procedure:—Run the resin and wood oil to 565° F. Hold 15 minutes. Add two-hour linseed oil. Cool to 425° F. Reduce. Add driers at 150° F.

The bakelite and amberol 226 varnishes were made by the following formulæ:—

100 pounds resin.
50 gallons wood oil.
60 gallons mineral thinner.
2½ gallons liquid lead drier.
5 pints liquid cobalt drier.

Procedure:—Heat the resin and wood oil to 450° F. Hold for a slight string. Pull kettle. Reduce. Add liquid driers at 150° F.

The two-hour linseed oil was bodied at 575° F for two hours.

The liquid lead drier contained 10.69 per cent metallic lead per gallon, while the liquid cobalt drier contained 2.5 per cent metallic cobalt per gallon.

The mineral thinner had a distillation range from 310°-400° F., with a weight per gallon of 6.71 pounds.

The percentage of metallic lead and cobalt in the 27½-gallon varnish was .232 and .025, respectively. In the 50-gallon varnishes the amount of metallic lead and cobalt was .23 and .013 per cent.

The pigments were ground in each synthetic resin vehicle in the following proportion:—

	Lbs. per gal.
1. Titanium dioxide.....	2
2. Titanox B.....	4
3. Titanox C.....	4
4. Lithopone	6
5. Chrome yellow medium.....	3
6. Venetian red.....	3
7. Toluidin toner.....	1
8. Frussian blue	1
9. Carbon black.....	¼

The paints were ground on laboratory roller and stone mills of several types.

A quart sample of each pigment grind and a quart sample of the clear varnish was reserved for testing, making a total of fifty-four paints and six varnishes.

The viscosities of the varnishes were to

Table 1—Drying Times of Paints and Clear Varnishes

		March 26, 1932				October 15, 1932					
		Weight, grams.	Start.	Set.	Dry.	Hours to dry.	Weight, grams.	Start.	Set.	Dry.	Hours to dry.	% diff. to dry.
A	1	160	9:31	10:54	1:48	4:17	265	9:30	11:30	2:56	5:26	27
A	2	200	9:51	11:38	2:18	4:27	260	9:23	11:50	2:56	5:36	26
A	3	160	10:28	11:42	1:14	2:46	260	9:44	11:51	2:56	5:12	28
A	4	190	11:01	12:46	2:12	3:11	170	9:49	11:30	1:12	3:23	6
A	5	100	11:18	12:28	2:10	2:52	140	9:53	11:34	1:45	3:52	35
A	6	150	9:40	12:04	8:00pm	10:20	110	9:59	1:10	2:48	4:49	—53
A	7	110	9:14	10:39	3:21	6:07	085	10:02	1:58	2:50	4:48	—22
A	8	115	10:06	....	7:39	9:33	200	10:08	9:47	9:00pm	58:52	516
A	9	72	9:42	1:00	8:03	10:21	145	10:11	2:50	9:40	11:29	11
A	10	101	10:26	11:36	3:00	4:34	220	1:22	3:40	5:27	4:05	—11
B	1	120	9:34	10:54	3:25	5:54	150	10:17	12:35	4:35	5:38	—5
B	2	300	9:59	11:50	5:05	7:06	255	10:22	12:19	4:28	6:06	—14
B	3	150	10:39	12:06	3:26	4:47	360	10:25	1:14	4:28	6:03	26
B	4	200	11:06	12:47	5:29	6:23	200	10:28	11:42	4:30	6:02	—5
B	5	165	11:14	12:51	3:30	4:16	175	10:32	12:21	3:15	4:43	11
B	6	181	9:45	12:04	8:00pm	8:15	160	10:37	1:40	4:30	5:53	—29
B	7	150	9:19	10:01	8:00pm	10:41	220	10:42	1:34	3:17	4:35	—57
B	8	140	7:34	....	8:00am	11:26	210	7:05	9:30	2:15	19:10	68
B	9	100	7:51	....	10:10	14:10	145	10:50	5:32	10:15	11:25	—19
B	10	130	8:43	9:36	4:45	8:02	235	1:26	4:22	7:30	6:04	—24
C	1	150	9:37	10:35	12:25	2:48	320	10:54	1:17	2:37	3:43	33
C	2	200	9:55	10:41	12:24	2:29	280	10:58	12:04	2:40	3:42	49
C	3	150	10:45	11:55	12:40	1:55	250	11:02	12:39	2:37	3:35	87
C	4	185	11:12	11:56	1:35	2:23	300	11:07	12:02	7:38	8:31	257
C	5	115	11:09	11:52	1:43	2:34	160	11:10	12:06	2:15	3:05	20
C	6	130	10:45	11:34	5:30	6:45	180	11:12	12:24	2:39	3:27	—49
C	7	98	1:10	1:58	8:05	6:55	175	11:18	1:20	2:35	3:27	—50
C	8	162	10:00	3:06	11:15	13:15	160	8:35pm	3:55am	11:38am	14:43	11
C	9	115	9:34	10:45	12:32	2:58	155	11:24	2:20	3:35	4:11	41
C	10	110	10:38	11:09	4:00	5:22	130	1:29	2:54	4:22	2:53	—46
D	1	125	1:20	1:53	2:59	1:39	350	11:30	1:45	3:13	3:43	125
D	2	110	1:27	1:54	2:58	1:31	260	11:35	12:25	2:18	2:43	79
D	3	160	10:49	11:25	11:37	:48	200	11:40	12:45	2:19	2:39	231
D	4	230	11:16	11:35	12:15	:59	270	11:45	12:26	1:16	1:31	54
D	5	123	1:53	2:10	2:49	:56	245	11:50	12:27	2:14	2:24	157
D	6	178	10:42	11:13	11:34	:52	150	11:55	12:28	1:16	1:21	56
D	7	130	10:26	10:52	11:32	1:06	135	11:55	12:20	2:30	2:35	135
D	8	175	1:37	2:19	8:49	7:12	130	12:00	1:05	2:30	2:30	—35
D	9	115	9:31	10:40	11:20	1:49	95	12:05	1:21	2:35	2:30	38
D	10	110	9:00	9:37	11:40	2:40	130	1:34	2:42	4:29	2:54	9
E	1	150	9:44	1:57	4:32	6:48	150	9:05	8:30	9:30	12:25	83
E	2	220	10:05	2:29	5:30	7:25	220	12:13	6:45	8:15	8:02	8
E	3	145	10:54	2:44	5:03	6:09	170	7:50	8:30am	9:30am	13:40	122
E	4	270	11:21	3:30	5:30	6:09	270	12:18	8:20pm	9:20	9:02	47
E	5	147	11:04	1:29	3:45	4:41	157	12:23	5:30	7:30	7:07	52
E	6	131	9:49	2:18	8:00	10:11	120	12:26	6:45	8:20	7:54	—22
E	7	123	10:15	2:15	4:25	6:10	140	8:25pm	8:10am	10:55	14:30	135
E	8	240	9:82	7:18	9:15am	47:37	180	8:30pm	8:00am	8:45pm	48:15	1
E	9	130	9:29	7:43	11:10am	25:41	115	12:37	9:00pm	9:00am	109:23	326
E	10	120	8:30	11:30	4:45	8:15	50	1:39	4:22	7:30	5:51	—30
F	1	160	9:48	1:11	2:39	4:09	175	12:45	....	4:15	3:30	—16
F	2	175	10:09	11:59	2:37	4:28	185	12:45	1:43	4:20	3:35	—20
F	3	150	10:57	12:45	2:15	3:18	180	12:54	5:00	5:30	4:36	39
F	4	190	11:21	12:49	2:36	3:15	205	12:55	1:45	4:22	3:27	62
F	5	130	11:00	11:59	12:37	1:37	205	1:02	3:13	4:23	3:21	107
F	6	162	10:36	12:55	5:30	6:54	165	1:11	4:24	5:00	4:29	—35
F	7	227	10:11	11:45	1:39	3:28	175	1:15	1:25	5:40	4:25	27
F	8	243	9:49	12:58	3:45	5:56	155	1:16	7:45	9:20	8:04	36
F	9	82	9:25	1:02	7:15	9:50	115	7:18pm	....	10:53	15:35	58
F	10	96	10:57	12:07	1:53	2:56	70	1:46	3:17	4:20	2:44	—7

Table 2—Viscosities of Varnishes at 100 Deg. F.

	Mar. 26, 1932.	Oct. 14, 1932.		Mar. 26, 1932.	Oct. 14, 1932.
A (ester gum varnish).....	244	241	D (bakelite, XR-254).....	713	715
B (paranol ex. hd. No. 1).....	585	569	E (rezyl 110).....	727	723
C (amberol F/7).....	462	456	F (amberol 226).....	497	512

Table 3—Viscosity of Paints at 25 Deg. C.

		March 26, 1932				October 15, 1932				
		Reading.	Wire.	Plunger.	Poises.	Reading.	Wire.	Plunger.	Poises.	% diff.
A	1	114	34:3	2 cm.	1.08	142	34:3	2 cm.	1.37	26
B	1	48	34:3	1 cm.	3.02	58	34:3	1 cm.	3.7	22
C	1	49	34:3	1 cm.	3.04	42	34:3	1 cm.	2.65	—13
D	1	89	34:3	1 cm.	5.6	89	34:3	1 cm.	5.6	
E	1	64	34:3	1 cm.	4.05	57	34:3	1 cm.	3.65	—10
F	1	67½	34:3	1 cm.	4.3	66	34:3	1 cm.	4.2	
A	2	165	34:3	2 cm.	1.56	180	34:3	2 cm.	1.77	13
B	2	97	34:3	1 cm.	6.2	109	34:3	1 cm.	6.9	11
C	2	98	34:3	1 cm.	4.9	77½	34:3	1 cm.	5.0	
D	2	124	34:3	1 cm.	7.8	108	34:3	1 cm.	6.8	—13
E	2	77	34:3	1 cm.	4.85	76	34:3	1 cm.	4.8	
F	2	65	34:3	1 cm.	4.1	73	34:3	1 cm.	4.6	12
A	3	274	34:3	2 cm.	2.6	228	34:3	2 cm.	2.15	—17
B	3	133	34:3	1 cm.	8.4	150	34:3	1 cm.	9.5	13
C	3	128½	34:3	1 cm.	8.1	135	34:3	1 cm.	8.5	
D	3	248	34:3	1 cm.	15.7	196	34:3	1 cm.	12.5	—21
E	3	106	34:3	1 cm.	6.75	138½	34:3	1 cm.	8.7	29
F	3	112	34:3	1 cm.	1.1	110	34:3	1 cm.	7.0	
A	4	243	34:3	2 cm.	2.3	346	34:3	2 cm.	3.29	43
B	4	131	34:3	1 cm.	8.25	173	34:3	1 cm.	11.0	33
C	4	135	34:3	1 cm.	8.5	175½	34:3	1 cm.	11.2	31
D	4	268	34:3	1 cm.	17.0	232	34:3	1 cm.	14.8	—13
E	4	130½	34:3	1 cm.	8.2	142	34:3	1 cm.	9.0	10
F	4	119½	34:3	1 cm.	7.5	137	34:3	1 cm.	8.75	16
A	5	130	34:3	2 cm.	1.22	256	34:3	2 cm.	2.4	97
B	5	154	34:3	1 cm.	9.75	244	34:3	1 cm.	15.9	63
C	5	90	34:3	1 cm.	5.7	177	34:3	1 cm.	7.25	26
D	5	130	34:3	1 cm.	8.2	172	34:4	1 cm.	10.8	32
E	5	87	34:3	1 cm.	5.5	97	34:4	1 cm.	6.15	11
F	5	96	34:3	1 cm.	6.1	101	34:4	1 cm.	6.4	
A	6	145	34:3	2 cm.	1.37	213	34:3	2 cm.	2.04	48
B	6	180	34:3	1 cm.	12.	323	34:4	1 cm.	20.5	70
C	6	55½	34:3	1 cm.	3.5	81	34:4	1 cm.	5.1	45
D	6	115½	34:3	1 cm.	3.35	130	34:4	1 cm.	8.2	144
E	6	115	34:3	1 cm.	7.3	118	34:4	1 cm.	7.45	
F	6	59	34:3	1 cm.	3.73	76	34:4	1 cm.	4.75	27
A	7	309	34:3	2 cm.	2.89	443	34:3	2 cm.	4.15	43
B	7	227	34:3	1 cm.	14.3	296	34:4	1 cm.	12.5	—12
C	7	74	34:3	1 cm.	4.65	69	34:4	1 cm.	4.3	—8
D	7	112½	34:3	1 cm.	7.2	121	34:4	1 cm.	7.6	
E	7	88	34:3	1 cm.	5.55	72	34:4	1 cm.	4.5	—19
F	7	89	34:3	1 cm.	5.6	98	34:4	1 cm.	6.2	10
A	8	169½	34:3	2 cm.	1.58	232	34:3	2 cm.	2.17	37
B	8	205	34:3	1 cm.	13.0	381	34:4	1 cm.	23.75	82
C	8	53	34:3	1 cm.	3.25	87	34:4	1 cm.	5.45	68
D	8	104½	34:3	1 cm.	6.7	370	34:4	1 cm.	23.25	247
E	8	116½	34:3	1 cm.	7.45	102	34:4	1 cm.	6.5	—13
F	8	42	34:3	1 cm.	2.65	45	34:4	1 cm.	2.82	7
A	9	85	30:5	1 cm.	43.5	99	30:5	1 cm.	50.0	15
B	9	39	30:5	1 cm.	19.75	46	30:5	1 cm.	23.5	18
C	9	38	30:5	1 cm.	19.25	42½	30:5	1 cm.	21.75	13
D	9	21	30:5	1 cm.	10.6	19	30:5	1 cm.	9.65	
E	9	65	30:5	1 cm.	33.	173	30:5	1 cm.	87.5	165
F	9	45	30:5	1 cm.	23.	45	30:5	1 cm.	23.0	

Table 4—Settling of Pigments
October 14, 1932

A 1 Good.	A 4 Fair.	A 7 Excellent.
B 1 Poor.	B 4 Good.	B 7 Excellent.
C 1 Excellent.	C 4 Excellent.	D 7 Excellent.
D 1 Good.	D 4 Good.	E 7 Excellent.
E 1 Poor.	E 4 Good.	F 7 Excellent.
F 1 Excellent.	F 4 Excellent.	A 8 Poor.
A 2 Fair.	A 5 Excellent.	B 8 Good.
B 2 Fair.	B 5 Excellent.	C 8 Poor.
C 2 Excellent.	C 5 Excellent.	D 8 Poor.
D 2 Good.	D 5 Good.	E 8 Excellent.
E 2 Poor.	E 5 Excellent.	F 8 Poor.
F 2 Excellent.	F 5 Excellent.	A 9 Excellent.
A 3 Excellent.	A 6 Poor.	B 9 Excellent.
B 3 Good.	B 6 Fair.	C 9 Excellent.
D 3 Good.	C 6 Good.	D 9 Good.
E 3 Poor.	D 6 Stringy—settle poor.	E 9 Excellent.
F 3 Excellent.	E 6 Good.	F 9 Excellent.
	F 6 Good.	

be held to an F-G body on the Gardner-Holdt tubes, but, due to different equipment, misinterpretations of the procedures, errors, etc., wide variances resulted.

Examination of Paints

Each paint was brushed and weighed on a glass slide and placed in a control room, where the humidity was kept between 55 and 60 at a temperature of 77° F.

The set and the dry of the paints were determined by the instrument invented by W. H. Harrison, of the California Ink Company. The instrument is made of brass, consisting of a balance-like arrangement so the tips can be made to bear down on the glass slide with as much pressure as may be desired by placing weights on spindle, or fine adjustment by sliding weight, along a graduated bar. When no weights are on the spindle and the sliding weights are at zero, the counter weight is adjusted so that the instrument balances and no weight bears down at the tip. The bearing is an ordinary steel bearing.

For the testing of the paints for setting, the instrument was adjusted as follows:—The sliding weight was placed for 25 grams with no weight on spindle and a glass tip. The glass slide was then wiped with a soft piece of paper and if paint did not smear the paper, the paint was considered set. The finger method was also tried, but the instrument was judged more accurate doing away with personal results.

For the dry, the instrument was without sliding weight and a 150 gm weight was placed on spindle, the tip being of rubber. The glass slide was then placed under the rubber tip and gently drawn to its edge. If the surface was not marred the paint was considered dry.

The viscosities of the varnishes were taken on a Saybolt universal viscosimeter at 100 deg. F., while the paints were taken on a MacMichael viscosimeter using a 34 and 30 wire at 25 deg. C. The readings on the MacMichael, taken by the deflection of the pendulum on the dial, have been changed and recorded in poises. This completes the method of examination of paints and varnishes.

The technical committee believes that the greatest source of error which developed in compiling results was the difference in weight of the paint films, in the drying tests. The heavier the weight on the glass slides the thicker the film. On the other hand, we were experimenting with quick-drying paints, and only where the drying time increased excessively would the film thickness amount to a great percentage of error. We have great faith in our viscosity readings and believe them to be absolutely as near correct as possible. We also believe if we had used only one liquid drier in the varnishes the drying times would have increased throughout our tests instead of having decreases in some instances.

Conclusions

From the tables of results following the following facts have been deducted:—

First:—That synthetic resins haven't any effect on the change in viscosity of clear varnishes. This result is conclusive when varnishes are held at top heats for the correct length of time so as not to over-polymerize the wood oil-synthetic gum combination. Otherwise a jellying action may take place and render the product unfit for use.

Second:—That the synthetic resins do not absorb driers. Five of the six varnishes were found to decrease in drying time. The bakelite XR-254 was the only varnish which increased its drying time, that time being so small that it may have been an error in judgment. In all probability, the decrease in drying time may have been due to a combination of the metallic driers forming a more active catalyst; it may have been due to a more uniform dispersion throughout the liquid or the combination of the synthetic resins and oils on ageing have a greater affinity for auto-oxidation.

Third:—That some pigments have a marked effect on viscosity. Lithopone, chrome yellow medium, venetian red, and prussian blue have been found to increase in viscosity the greatest. Rezql 110 with carbon black and toluidine toner with ester gum are the other two paints which have acted like the aforementioned pigments. The titanium pigments, toluidin toner and carbon black have remained almost uniform.

Excessive bodying may be caused by:—

1. The pigment reacting with the vehicle forming soaps which give a jelly-like structure.
2. The pigment change in degree of dispersion wthout undergoing a chemical reaction. These changes in dispersion are sometimes caused by absorption of materials in the vehicle, or sometimes seem to be inherent in the pigment. (Carbon black in rezyl 110.)
3. The pigments reacting with the non-polymerized china wood oil.
4. Sweating or evaporation.

Decreases in viscosity may be caused by:—

Neutralizing action of pigments on acidic vehicles.

Fourth:—That pigments absorb driers. This is especially true of carbon black, prussian blue, toluidin toner and the titanium pigments.

Loss in drying rate may be caused by:—1. The absorption of the drier by pigment in oriented fashion with the metallic atom in and the organic atom out. This picture obviously causes decrease in drying rate after absorption takes place.

2. The absorption of the drier by colloidal material in the varnish.
3. Increase in drying rate may be caused by the formation of drying catalizers by reaction of pigment on vehicle.
4. Increase or decrease in drying rate with age may be caused by changes in the dispersion or state of solution of the oxidized catalizers present.

The California Paint Superintendents' Club acknowledges with gratitude the raw material samples given them by:—California Ink Company, Paramet Chemical Company, American Cyanimid Company, Titanium Pigments Corporation, Resinous Products Company, L. H. Butcher Company, Bakelite Corporation, S. L. Jones & Co.

The technical committee wishes to acknowledge with thanks the ready aid given by the members of the club to make this paper possible.

Chicago Club

O. P. Clipper then presented the following paper on behalf of the Chicago Paint and Varnish Production Club:—

Study of the Relative Merits of Spray and Brush Painting

From our observations previously made we felt that one series of panels should be devoted to a further study of the results noted last year using a paint having a pigment combination of 50 percent lithopone, 40 percent leaded zinc (35 percent), and 10 percent inert. We found that this pigment combination made the best all-around showing for surface protection, and in consequence, we have divided each panel of the first series of five into four sections painted as follows:—

The first quarter of each panel was spray painted with one coat of a special primer. The second quarter was coated with the same special primer applied by brush. The third quarter was primed with No. 1 paint reduced and sprayed as shown below. The fourth quarter of each panel received a brush coat of the same primer as used on the third quarter. Over each of the areas thus primed a finish coat of No. 1 paint was applied, spraying the finish coat over the sprayed primer and brushing the finish coat over the brushed on primer in each instance.

The composition of the special primer used is as follows:—

Pigment	63.6%	
Basic carbonate lead	60	%
Zinc oxide	20	%
Titanox B	19	%
Aluminum bronze powder	1	%
Vehicle	34.4%	
Raw linseed oil	40	%
Boiled linseed oil	30	%
Turpentine	16½	%
Solvent naphtha	10	%
Drier (Pb. Mn.)	3½	%
Weight per gallon	16.7 lbs.	

This primer was included as a part of our test with a view to determining the effect of such special primers on the durability of the finish coat. Since this primer is quite grayish in shade it not only hides the surface better than the regular primers used, but has resisted chalking to a marked degree on each panel. Further observations have shown that a heavier film having been produced by not reducing the special primer to the same pigment concentration as the other primers, the finish coat makes a better appearance. This apparent thickness of film of the two coats may be the determining factor in the durability of the paint on this first series of panels.

The composition of the other white paints used in this series of tests is shown below:—

No. 1 Paint. Weight per gallon, 14.8 lbs.		
Pigment	62%	
Lithopone	50%	
35% leaded zinc oxide	40%	
Silica	5%	
Asbestine	5%	
Vehicle	38%	
Raw linseed oil	80%	
Kettle bodied oil	8%	
Naphtha	7%	
Turpentine drier	5%	

The above paint was reduced for primer by the addition of one quart of raw linseed oil and one quart of turpentine to one gallon of paint.

No. 2 Paint. Weight per gallon 11¼ lbs.		
Pigment	44%	
Titanox B	70	%
Titanium dioxide	15	%
Zinc oxide	15	%
Vehicle	56%	
*Phenol rosin varnish	75	%
Boiled linseed oil	12	%
Turpentine	6	%
Xylol	3.4%	
Solution	2.0%	
Drier	1	%

*The phenol rosin varnish was made up (by weight) as follows:—

Phenol rosin	13	%
Wood oil	45	%
Heavy naphtha	42	%

This paint was reduced for priming purposes by the addition of one-half gallon raw linseed oil and one-half pint of turpentine to one gallon of paint.

No. 3 Paint. Weight per gallon 11½ lbs.		
Pigment	43%	
Titanox B	70	%
Titanium dioxide	15	%
Zinc oxide	15	%
Vehicle	57%	
*Phenol ester varnish	77	%
Boiled linseed oil	12	%
Turpentine	6.4%	
Solution	2.5%	
Drier	3.1%	

*The phenol ester varnish consisted of:—

100% Phenol formaldehyde	By weight.	
Type—Resinoid	25%	19.1%
Ester gum	71%	
Rosin	4%	
Wood oil	67%	35.0%
Bodied linseed oil (body Q Oil)	33%	
Heavy naphtha		37.1%
Xylol		2.8%
Turpentine		6.0%

Reduction of the No. 3 paint for priming purposes was accomplished by adding one-half gallon raw linseed oil and one-half pint of xylol to one gallon of paint.

No. 4 Paint. Weight per gallon 11½ lbs.		
Pigment	43%	
Titanox B	70	%
Titanium dioxide	15	%
Zinc oxide	15	%
Vehicle	57%	
*Phthallic anhydride varnish	83.5%	
Boiled linseed oil	11.4%	
Drier	2.4%	
Solution	2.7%	

*Phthallic anhydride varnish percentages by weight:—

Glycerol phthalate linseed acid resin	90%	42.5%
Heavy naphtha		
Pine oil	10%	57.5%

Reduction of this paint for priming purposes was effected by the addition of one-half gallon of raw linseed oil to one gallon of paint.

From the nature of the No. 1 paint and its relation to last year's test fence results we have considered it in the light of a control for the other paints, Nos. 2, 3, and 4. We are also specially interested in the No. 1 paint on the various kinds of wood as a comparison between the brush and spray work, inasmuch as our previous consideration of this paint had dealt only with a spray painted panel. It is hoped that some definite conclusions can be drawn from the No. 1 paint at a later date regarding the relative merits of a spray job and a brush job with one of the more common types of linseed oil paint.

With the introduction of the newer synthetic liquids in three of the paints we have an additional opportunity to study their relative merits under both spray and brushing applications. Paints Nos. 2, 3, and 4 weighed only eleven and one-half pounds per gallon, and would naturally give thinner films than Paint No. 1. However, throughout the entire series of tests the spray work had every appearance of having been as heavily and as uniformly applied as the brush work in each case.

On these panels we found no evidence of chalking on the areas treated with the special primer, and throughout the spray applications on this series a much better general condition of the film was produced.

The second series of panels, using the same kinds of wood but using brush and spray applications of paints having vehicles composed in part of some synthetic varnish, were primed by reducing the finish coat as shown under the previously given formula. No special primers entered into the next three series of panels.

Panel No. 6 pine was rated as the best of this group for general conditions of the film on both brush and spray areas with panels Nos. 7 and 8 rating close seconds.

The time of exposure of these panels being quite limited we did not expect to find any marked failures in our first description of this experiment. We have made a rating for general appearance and condition of the panels as a whole for comparative purposes. We have classed the first group of five panels as making the best showing No. 1; the second series as No. 2; the fourth group as No. 3, and the third series as No. 4.

On the 15th of August No. 2 paint looked best on all woods, was chalking very much, and under the chalk was quite yellow.

No. 1 paint had not yet begun to clean itself.

Cincinnati-Dayton-Indianapolis Club

Fred Chinery, on behalf of the Cincinnati-Dayton-Indianapolis Paint and Varnish Production Club, then presented the following paper:—

Effects of Driers on Durability

In the paper presented before the federation convention at Chicago in December, 1931, by Glenn H. Pickard, it was brought out that there is a question as to what effect an excess of each of the three principal driers might have upon the wearing of paints and kindred products provided the excess were not sufficient to cause skinning due to rapid surface drying, or prolonged tackiness from the formation of an excess of peroxides in the linseed oil.

An investigation as to whether paints and kindred products, in which the only variable was the amount of drier, had been exposed indicated that it has never been done. Obviously such a piece of research cannot be completed in a short time unless comparisons are made in some sort of accelerated equipment. Results of the two years of study of accelerated weathering by our club showed that results obtained in this manner were an entangled mass of contradictions and unexpected results. Therefore, in this work roof exposures at 45° facing south are being used.

The work at this time does not include driers other than the linoleates and naphthenates of lead, manganese and cobalt. It is our idea to confine our work primarily to oil paints and varnishes, and the three driers of the two types and prove whether excesses in the individuals or excesses in the combinations of several sorts over the necessary amount to obtain a satisfactory drying rate have any detrimental action on the durability of the film. By so limiting our work, we believe that the main object of our research will not be confused and consequently none of the potential value of the fundamental object will be lost. In all of our work the only variable is the amount of drier. The oil, thinner, pigment, etc., are constant.

With the idea of having something definite to report at this meeting of the federation, we prepared two short oil varnishes—one a thiry-gallon rosin ester gum linseed oil varnish and the other a thirty-gallon rosin or ester gum china wood oil varnish.

Composition of the oils used:—

Linseed Varnish Oil

Acid number	2.42
Specific gravity	.9321
Iodine number	183.2
Saponification number	191.8
Unsaponifiable	1.27

China Wood Oil

Acid number	2.66
Specific gravity	.9419
Iodine number	167.4
Saponification number	194.2
Unsaponifiable	.577
Refractive index	1.51730
Heat test	8 Min.
Gel	O. K.

The varnishes have the following formula (by weight):—

	Percent.
Rosin ester gum	23.6
Oil	55.2
Mineral spirits	21.2

In the preparation of the varnishes the linseed varnish was taken to 575° F. in 35 minutes, held 90 minutes, ester gum added, run to 515° F., cooled to 450° F. and reduced. With the china wood oil varnish the oil and two-thirds of the ester gum was run to 540° F., and then remainder of gum was added, held until gum was melted out, cooled, and reduced.

The linoleate and naphthenate, or soligen liquid driers, were made to the same metallic content with mineral spirits, the cobalt and manganese containing 4 per cent metal and the lead 15 per cent metal.

In making the linoleates they were heated to about 325° F. and then part of the mineral spirits added, cooled some, and then more thinner added at about 250° F., and balance put in at about 200° F.

When using the lead drier it was heated up to approximately 160° F., to be sure that all the drier was in solution.

The naphthenates were prepared in accordance with published recommendations of the manufacturer, benzoic acid being added to the cobalt and manganese drier.

Driers were added to each varnish in the proportion of 1—cobalt, 1—manganese, 4—lead. The following weights of metal content were added to the weight of oil:—

Percent			Mark on
Cobalt.	Manganese.	Lead.	Container.
0.038	0.038	0.144	1
0.115	0.115	0.432	3
0.278	0.278	1.007	7
0.384	0.384	1.440	10

Variation of Drier Content

From the above you will note that the variation in dried content is on the basis of 1, 3, 7 and 10 times the unit or base adopted. Hereafter reference to each drier variation will be by Nos. 1, 3, etc., the ones without any drier being No. 0. The lead drier is used in the amount of 2.25, 6.75, 15.75 and 20.25 aridynes.

Varnishes were applied to 22 gauge auto body flat sheets 4 in. x 12 in.; one-half of the panel was primed with a black baking semi-gloss enamel.

In the preparation of these mixtures a definite volume of varnish was used. To that the varying amounts of liquid driers were added to give the desired drier content and then to each varnish the proper amount of thinner was added to bring the varnish to the desired non-volatile content—approximately 50 percent.

Three panels were prepared from each varnish of varying drier content. After six days' exposure, the following panels were still tacky, so they were placed in a baking oven:—

Linseed—Pb. Sol. Nos. 1-3-7-10
Linseed—Pb. Lin. Nos. 1-3-7-10
Linseed—Mn. Sol. No. 10
Linseed Oil—No. 0

After baking for 41 hours at 120 deg. F., and 3½ hours at 150 deg. F., they still showed a slight tack. All the panels were then wet sanded (covered with water and sanded lightly) and recoated.

After seven days the following sets of panels were still tacky:—

Linseed—Pb. Sol. Nos. 1-3-7-10
Linseed—Pb. Lin. Nos. 1-3-7-10
Linseed—Mn. Sol. Nos. 1-10
Linseed—Mn. Lin. No. 10

These were then baked for seventeen hours at 150 deg. F.

Drying Time

Average temperature, 91 deg. F.
Average humidity, 70 percent.

Panel No.	Varnish.		Hours—Dust free.	Tack free.
1—C.W.O.—No.	Dri.	No. 0	8½+	8½+
2—C.W.O.—Co.	Lin.	No. 1	2½	8
3—C.W.O.—Co.	Lin.	No. 3	2	5½
4—C.W.O.—Co.	Lin.	No. 7	2	5½
5—C.W.O.—Co.	Lin.	No. 10	2	5½
6—C.W.O.—Co.	Sol.	No. 1	2½	7
7—C.W.O.—Co.	Sol.	No. 3	2	7
8—C.W.O.—Co.	Sol.	No. 7	2	4½
9—C.W.O.—Co.	Sol.	No. 10	2	4½
10—C.W.O.—Mn.	Lin.	No. 1	8½	8½+
			Gassed	
11—C.W.O.—Mn.	Lin.	No. 3	7¼	8½+
12—C.W.O.—Mn.	Lin.	No. 7	6	8½+
13—C.W.O.—Mn.	Lin.	No. 10	6	8½+
14—C.W.O.—Mn.	Sol.	No. 1	8½	8½+
			Gassed	
15—C.W.O.—Mn.	Sol.	No. 3	7½	8½+
16—C.W.O.—Mn.	Sol.	No. 7	7	8½+
17—C.W.O.—Mn.	Sol.	No. 10	6½	8
18—C.W.O.—Pb.	Lin.	No. 1	8½+	8½+
19—C.W.O.—Pb.	Lin.	No. 3	5¾	8½
20—C.W.O.—Pb.	Lin.	No. 7	3¼	8½
21—C.W.O.—Pb.	Lin.	No. 10	2½	8½
22—C.W.O.—Pb.	Sol.	No. 1	8½	8½+
			Gassed	
23—C.W.O.—Pb.	Sol.	No. 3	5¼	8
			Gassed	
24—C.W.O.—Pb.	Sol.	No. 7	4½	8
			Gassed	
25—C.W.O.—Pb.	Sol.	No. 10	4	7½
26— L. O. —No.	Dri.	No. 0	8½+	8½+
27— L. O. —Co.	Lin.	No. 1	5½	8½+
28— L. O. —Co.	Lin.	No. 3	4¾	8½+
29— L. O. —Co.	Lin.	No. 7	4	8½+
30— L. O. —Co.	Lin.	No. 10	4	8½+
31— L. O. —Co.	Sol.	No. 1	7	8½+
32— L. O. —Co.	Sol.	No. 3	4½	8½+
33— L. O. —Co.	Sol.	No. 7	3½	8½+
34— L. O. —Co.	Sol.	No. 10	3½	8
35— L. O. —Mn.	Lin.	No. 1	8½+	8½+
36— L. O. —Mn.	Lin.	No. 3	8½+	8½+
37— L. O. —Mn.	Lin.	No. 7	8	8½+
38— L. O. —Mo.	Lin.	No. 10	8	8½+
39— L. O. —Mn.	Sol.	No. 1	8½+	8½+
40— L. O. —Mn.	Sol.	No. 3	8½+	8½+
41— L. O. —Mn.	Sol.	No. 7	8½	8½+
42— L. O. —Mn.	Sol.	No. 10	8	8½+
43— L. O. —Pb.	Lin.	No. 1	8½+	8½+
44— L. O. —Pb.	Lin.	No. 3	8½+	8½+
45— L. O. —Pb.	Lin.	No. 7	8½+	8½+
46— L. O. —Pb.	Lin.	No. 10	8	8½+
47— L. O. —Pb.	Sol.	No. 1	8½+	8½+
48— L. O. —Pb.	Sol.	No. 3	8½+	8½+
49— L. O. —Pb.	Sol.	No. 7	8½+	8½+
50— L. O. —Pb.	Sol.	No. 10	8½+	8½+

Two Sets of Exposures

Two sets of panels were exposed on roofs at 45 deg. facing south in Dayton and one in Cincinnati, July 29, 1932. In each case a portion of the panel was protected from exposure so that it could be used for comparison.

The following is a summary of the three roof exposures after a period of two and one-half months. An effort will be made to follow the code for designating and evaluating exposure tests as proposed by the New York club at the 1931 convention in reporting the final inspections.

At the end of two weeks all panels were O. K.

After four weeks, several panels were showing slight rust on lower sections (top section is primed; on lower section varnish is applied over bare metal) and the linseed oil varnish films were losing some gloss, but not enough to definitely record.

Six weeks—The linseed varnishes applied over the second type primer were peeling. A shortage of three or four regularly primed panels at time of application of varnishes prompted the change for the entire series, which in view of results to date was unfortunate. This comprises the series with linseed varnish containing no drier and those containing lead soligen. Primer apparently was too short lived for this exposure test. Therefore, inspection hereafter on this series must be on varnish over bare metal.

Eight weeks—All panels taken in, washed with warm water and cotton. Noted difficulty of cleaning most of the linseed panels as compared to the ease of cleaning the china wood varnish films.

On October 15, after eleven weeks' exposure, the panels were taken in, washed and examined only with unaided eye. Panels were examined in groups of four,

interest being primarily in the effect of the varying amounts of driers.

China Wood Oil Varnishes

No drier. Panel 1, good gloss, no wrinkle on edges.

Co. Lin. Panels 2, 3, 4 and 5, all good gloss, all have wrinkles on edges and about equally, 1 and 2 have best gloss, 3 and 4 next, with 5 lower yet. No definite cracks to eye. No rust.

Co. Sol. Panels 6, 7, 8 and 9, very good shape, no rust, good gloss. 7 slightly highest gloss, 6 practically no wrinkle on edge. 7, 8 and 9 wrinkle about equal, with 7 least of the three.

Mn. Lin. Panels 10, 11, 12 and 13, very good gloss, possibly more than first nine, no wrinkles, no rust, no checks. First coat of 11 had cracked badly before exposure.

Mn. Sol. Panels 14, 15, 16 and 17 O. K. and much like last four. Slight rust on 14 and 15 on bottom or part without baking enamel.

Pb. Lin. Panels, 18, 19, 20 and 21 very good, no rust, slight wrinkle on heavy edge of 19, 20 and 21, with none on 18. Gloss good, no cracks.

Pb. Sol. Panels 22, 23, 24 and 25 O. K. Slight rust on bottom sections. Good gloss, no wrinkles or failures.

Linseed Oil Varnishes

No Drier. Panel 26. On second type primer panel peeling badly from enamel. O. K. over bare metal. Considerable rust. All of the second type primer panels seem to show red rust, which is no doubt merely an oxidizing of panel in oven before applying the varnish.

Co. Lin. Panels 27, 28, 29 and 30, all show many small cracks increasing in visibility as drier content increases. Very little rust.

Co. Sol. Panels 31, 32, 33 and 34 all show failures varying from very dim on 31 to solid medium-sized cracks on 34. A very nice gradation according to drier content. Practically no rust.

Linseeds are not showing as much gloss as wood oils.

Mn. Lin. Panels 35, 36, 37 and 38 all solid fine cracks, very dim in 35, but more plain in 36 and 37, then not so plain again in 38. No rust. 37 and 38 had large wide checks in first coat before exposing. Most of linseed oil panels were difficult to wash, caused no doubt by soft films as in 37 and 38, or cracks and dust.

Mn. Sol. Panels 39, 40, 41 and 42 show no rust. Fine cracks quite apparent in 41 and 42. 39 first coat apparently very soft when second coat applied as it seems to have been pulled apart by second coat. 40 shows the same effect, but only slightly. 42 shows those wide checks, ¼ inch wide, in first coat before exposure.

Pb. Lin. Panels 43, 44, 45 and 46—no rust. 45 and 46 showed those large cracks solid over panel in first coats before exposure. No failures in film due to exposure

Pb. Sol. Panels 47, 48, 49 and 50 on second type primer are all peeling badly, some black enamel and all. Over bare metal all have good gloss, no cracks and washed clean, same as 43 to 46, inclusive.

Panels 26 to 35, inclusive, were all very dull where panel was protected by cover of racks. 35 to 42, inclusive, were dull, hard to wash, and failed in most cases. However, 43, 44, 45 and 46 are in very good condition where protected, washed clean and show same gloss as rest of panel.

Report of Progress

This report is primarily one of progress and, therefore, we do not want to draw definite conclusions. All the varnishes are still giving protection. There have been no failures of the wood oil varnishes. With manganese and cobalt driers on the linseed oil panels, with both linoleates and soligens, on increasing the drier content there was decreased life of film. No failures are noted with linseed oil varnishes containing lead.

Due to the fact that heat was used to aid drying on some panels and that the second type of primer on one series was too short lived for the test a condition is introduced which from a purely scientific angle would eliminate them from consideration. However, the temperature used to aid drying was practically equivalent to a forced air dry and the panels whereon the primer failed can be evaluated on the condition of the varnish over the bare metal. The results to date give a good basis for further work with increased amounts of driers, especially lead, and in the end we hope to ascertain whether there is a definite relationship between rate of drying and durability.

In addition to the work reported in this paper, tensile strength and elongation, fadeometer and aging tests on films prepared from the various types of varnish are being made. The methods of preparation and testing films are outlined below.

Preparation of the Film

A sample of the oil to be tested is weighed to contain 7.5 grams of solids and naphtha is added, if necessary, to make the thinner 35 per cent of the total weight. This is brushed on an amalgamated tin plate 8 inches by 9 inches. The plates are placed in a drying oven which is heated by a gentle flow of air, dehydrated with calcium chloride to produce a standard condition, passing over a steam coil in the bottom of the oven. The standard temperature used is 170° to 180° F. Chinawood oil and other oils containing driers which cause a tendency to wrinkle are dried at a lower temperature regulated to prevent this wrinkling. The films are left in the oven until the surface is free from tack. Then they are stripped from the plate and are ready for testing.

Methods of Testing

Samples are cut from the film with a die.

The tensile strength and elongation is determined on these samples with a Sutten yarn tester having the jaws spread 3 inches apart. An average of 6 of these tests is taken for the result.

Fadeometer tests are made by exposing the films in the machine operating at a temperature of 170° to 175° F. The point of failure is taken as the time when the film breaks after it has been taken from the machine, cooled to room temperature and bent sharply.

Aging

The films are aged for six months in a ventilated cabinet which was constructed to exclude as much light as possible. After aging, they are again subjected to the above tests.

Oil paints in semi-paste form have been prepared using raw linseed oil and the pigment combinations in paints A. B., and C of the Northwestern club in their study of priming coat reductions for new wood surfaces. These are straight white lead, lead-zinc-inert (60-30-10) and a titanox-zinc-inert (60-30-10) paints. Equal volumes of pigment are to be applied to southern pine panels with a variation of drier content only. Roof exposures at 45° facing south to be made.

We acknowledge and appreciate the courtesy of the Archer-Daniels-Midland Company, the Advance Solvents & Chemical Corporation and the Shepherd Chemical Company for materials supplied.

Cleveland Club

The following paper was read by C. J. Moore on behalf of the Cleveland Paint and Varnish Production Club:—

Comparison of High Solvent Value Petroleum Solvents

During the last few years solvents of the coal tar or aromatic type such as toluol, xylol, solvent naphtha, and high flash naphtha, have enjoyed wide use in the paint, varnish and lacquer industry. Toluol and xylol have been used for some time in the lacquer industry, and these two solvents, together with solvent naphtha and high flash naphtha, have been necessary for the economical development of the later phenolic resin type varnishes, alkyd resins and other types of synthetic finishes. These last named higher boiling coal tar solvents possess desirable solvent properties, but also have objectionable odors, are frequently dark in color, and most serious of all sometimes contain appreciable quantities of naphthalene.

More recently petroleum refiners have endeavored to produce solvents having the requisite solvent properties, together with improved color, odor and a wide range of evaporation rates. It is a well-known fact that asphaltic base crudes contain appreciable amounts of aromatic hydrocarbon. These have been concentrated by selective extraction until products of very good solvent properties have been obtained. Another source of high solvency petroleum products is the hydrogenation of various unsaturated hydrocarbons obtained from the cracking columns used in the manufacture of gasoline.

The use of some of the faster evaporating products of these types in nitrocellulose lacquers is well known. They are frequently designated as "toluol substitutes" or "xylene substitutes," and other suggestive terms. Definite physical methods of evaluating the efficiencies of these products for use in lacquers have been devised. We have endeavored to apply these same methods to the higher boiling and slower evaporating solvents of these types, which might indicate their relative suitability for use in various types of synthetic resin products. These tests, very ably described in Scientific Section circular 378 of the American Paint and Varnish Manufacturers' Association, by J. R. Stewart, are as follows:—

1. Kauri butanol.
2. Anilin point.
3. Dimethyl sulphate value.

The dilution ratio was not investigated since we wished to apply these tests to different types or classes of products. However, when a manufacturer wishes to apply his test to a particular product, he will, of course, find the dilution ratio one of the simplest and most practical tests to use.

Experimental

The kauri butanol test is quite easy to run. One hundred grams of kauri gum are dissolved in 500 gms. of butanol, allowed to settle, and the clear solution decanted off. To twenty grams of this solution in a 200 c.c. Erlenmeyer flask, the solvent is titrated in until paper carrying 10 point print is blurred and remains no longer legible. The number of c.c. required is taken as the kauri butanol value.

The anilin point is the maximum temperature at which substantially equal quantities of the solvent under test and anilin can exist as two separate liquid phases.

The dimethyl sulphate test is conducted by carefully mixing 9-12 times, 100 c.c. each of dimethyl sulphate and the solvent. The dimethyl sulphate value is the amount of liquid dissloved by the reagent. This is a direct measure of the aromatics, olefins and diolefins present.

The use of the tests mentioned above were confined to those petroleum products which gave solutions of rezyl 1102 and rezyl 110, which would pour, the concentration of the resins being 25 percent and 50 percent, respectively. Other criteria of the relative solvent powers of these products were their ability to lower the viscosity of varnishes prepared from amberol K-12-A, bakelite XR-254, and a cold cut of amberol F-7.

Solutions of the two rezyls were effected by heating on the water bath and then weighing out while warm and dissolving in the amount of thinner specified above.

The amberol F-7 was a 50 percent solution made in the cold.

The amberol K-12-A varnish was made up as follows:—

90	lbs. K-12-A amberol
10	lbs. Limed rosin
11	gals. Wood oil
4	gals. Kettle bodied linseed oil
2	lbs. Lead acetate
22½	gals. Mineral spirits

Heat the amberol, 5½ gallons of wood oil and one gallon linseed oil to 560 deg. F. Hold for five minutes. Add remainder of wood oil and gain 540 deg. F. check with rosin, add lead acetate, linseed oil and reduce. Using this as a base varnish, seven ounces by volume were mixed with one ounce by volume of the solvent to be tested.

The bakelite XR-254 varnish was made up as below:—

100	lbs. XR-254
23	gals. Wood oil
2½	gals. Improved raw linseed
6	gals. Cellosolve
2	gals. Toluol
4	gals. High flash naphtha
33	gals. Mineral spirits
7/32	gals. Cobalt driver (resinate)

The XR-254 and wood oil were run to 480 deg. F. in 30 minutes, held 45 minutes and the linseed oil added. The batch was then pulled from the fire, held for body and reduced. The solvents to be tested, replaced 25 percent of the solvents called for in the above test, and G-H bodies given in table 1.

Discussion

The results of the tests on the various types of synthetic resin and solvents are tabulated in table 1 (below). The particular resins selected are to be considered representative of three classes of products, and may be applied to any manufacturer's materials. A number of solvents other than those tabulated were investigated. However, only those solvents which would dissolve Rezyl 1102 were considered of sufficient merit to warrant further study.

In this table the values under the first test are expressed in percentages. The kauri butanol values are in c.c., and the anilin points in degrees centigrade, while all the letters refer to the Gardner-Holdt varnish scale. "Too heavy" indicates that while a clear solution was obtained, the body was beyond the range of the Gardner-Holdt scale. The anilin points were not run below —11 deg. C.

In the case of the three Standard Oil of New Jersey solvents, the dimethyl sulphate test, the kauri butanol test and the anilin point increase in the order 100-300, 200-300, and 300-400. This order is also maintained in the case of the bodies of the rezyl 1102 and 102 solutions The order is reversed in the F-7 amberol solutions, and the bakelite varnish. Very slight differences in the K-12-A varnishes are noted, and those in the same direction as the cold cut of amberol F-7.

In the case of the Union Oil Company's solvents 20, 30, and 40, the dimethyl sulphate values decrease with increasing distillation range and decreased evaporation rates. The kauri butanol values and the anilin points show insignificant changes. In this instance the bodies of the F-7 cut, the rezyl solutions, and the varnishes all show variations in the same order as the dimethyl sulphate values, while there are only slight differences in the anilin points, they are in the reverse order to the solutions and the dimethyl sulphate values.

The low anilin point solvents 20 and 40 show marked improvement in the anilin points and kauri butanol values, and some increase in the dimethyl sulphate values over the regular 20 and 40 solvents. No differences are noticeable in the F-7 solutions and very slight in the two varnishes. Decreases are noted in the body of the rezyl 1102 solutions, and in the L. A. P. 40 solutions of rezyl 110, while the results in the case of the L. A. P. 20 solutions of rezyl 110 the order is reversed again.

With the Union 8, all the values indicate poor solubility. As a matter of fact, this appears to be true only in the case of rezyl 1102, this solvent being very good for all of the other resins and the two varnishes.

Union toluol substitute has an excellent kauri butanol value, and only a mediocre dimethyl sulphate value and anilin point. It is, however, the best of all for the F-7, second best for the rezyls and fair for the two varnishes.

Union xylol substitute shows an unwarranted solvency towards rezyl 1102, amberol F-7 and the bakelite varnish, with poor results in the case of rezyl 110 and the K-12-A varnish.

The Shell naphtha "D" has a rather low dimethyl sulphate value and an excellent anilin point, but the solvency is more in keeping with the dimethyl sulphate value.

Apparently few general relationships may be drawn from the above tables. However, the bodies of the rezyl 1102 solutions almost without exception, follow in exactly the same order as the dimethyl sulphate values. In the case of rezyl 110 this same relationship holds in a general way, with the exception of the range of values between 34 and 42. For some reason the solutions of F-7 amberol do not check with any of the values. The K-12-A and XR-254 varnishes contain relatively small amounts of the solvents and therefore other elements enter into the results.

The anilin points show a general trend in the same direction as the dimethyl sulphate values, but there are too many discrepancies to place reliance on this method.

The kauri butanol values do not appear to tie in with any of the solutions or varnishes. These values do not even indicate any definite trend, as the anilin points do.

Tables 2 and 3 are self-explanatory, and require little if any explanation. The evaporations were determined on the Hart evaporation balance (see Scientific Section circular 360). It is interesting, however, to note that the Standard Oil 200-300 solvent evaporates more rapidly than do the Union 8 and the Union toluol substitute. Probably the most unusual fact is the relatively rapid evaporation of the high boiling solvent Standard 300-400 when compared to Union 30 solvent, both of these solvents having nearly identical distillation ranges. These results indicate as well, just how little a distillation range can mean.

The gummy or oily residues left by certain of the solvents are a distinct drawback. They are probably due to the formation of polymerization products of certain olefines and diolefines.

Acknowledgment

Appreciation is expressed to the various oil companies, as well as the manufacturers of synthetic resins who so kindly furnished us with working samples of their products. It is quite possible that since this paper was prepared these oil companies have more suitable products available. We only regret that we were unable to investigate the many interesting possibilities which came up during this work.

Table 1

Arranged According to Increasing Dimethyl Sulphate Values

Solvent.	Dimethyl sulphate.	Kauri butanol.	Anilin point.	Amberol F-7.	Rezyl 1102.	Rezyl 110.	K-12-A varnish.	XR-254 varnish.
Union No. 40	26	67	+ 9° C	W	Too heavy	N	P	K-L
Std. Oil 100-300° F	31½	55½	+10° C	E	Too heavy	L	J-K	I
Union No. 30	32	64	+10° C	T	Z-6	K	N	K
Union No. 8	34	59	+16.4°C	F	Too heavy	F	L	H-I
Union No. 20	36	67	+11° C	L	Z-4	D	M	I
Shell "D" naphtha	38	68	—11° C	M	Z-4	G	M	I
Union L.A.P. No. 40	40	79	—11° C	V-W	T-U	I	P	K
Std. Oil 200-300° F	42	63	—3.3°C	F	W	E	L	J
Union xylene subst.	42	66	+3.4°C	H	S	T	M	H-I
Union L.A.P. No. 20	49	76	—11° C	L	W-X	E	K-L	J
Union toluol subst.	52	74	0° C	D	D	C	M	H-I
Std. Oil 300-400° F	73	78	—11° C	P	A	C	L	K
75% xylol / 25% mineral spirits	64	83	—11° C					
50% xylol / 50% mineral spirits	31	49	+14½°C					
75% mineral spirits / Mineral spirits	18	39	+38° C					
Xylol	100	..	.....					

L.A.P. signifies low anilin point.

Table 2

Evaporation Rates

Solvent.	25%	50%	75%	90%	100%	
Std. Oil 100-300	¾"	1⅜"	3¼"	4½"	5½"	
Std. Oil 200-300	1"	2½"	4½"	5½"	6½"	
Deep rock naphtha	2"	4"	6½"	9"	11"	
Union No. 8	2"	4"	6"	8½"	11"	
Toluol	3"	7"	11¼"	18½"	25"	
Union toluene sub.	5"	8"	14"	19"	25"	
Shell "D" naphtha	13"	23"	36"	47"	52"	
Union No. 20	9"	20"	30"	44"	65"	
Std. Oil 300-400	12"	27"	48"	50"	79"	
Union xylene sub.	10"	25"	44"	60"	90"	
Union L. A. P. No. 20	15"	30"	53"	70"	120"	
Deep rock spirits	28"	47"	72"	95"	127"	Oily Residue
Union No. 30	44"	72"	286"	435"	645"	
Union No. 40	245"	435"	540"	60%....	95%—24 hrs.	Oily Residue
Union L. A. P. 40	245"	435"	540"	60%....	95%—24 hrs.	Oily Residue

L. A. P. signifies low anilin point.

Table 3

Distillation of Solvents

(°F.)

Solvent.	B.P.	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	E.P.
Std. Oil 100-300° F	132	161	176	192	206	218	230	242	256	275	278	278
Std. Oil 200-300° F	213	218	224	228	231	235	240	246	255	270	294	296
Deep rock naphtha	218	229	235	241	249	255	263	270	281	300	322	334
Union No. 8	204	208	213	216	219	222	226	230	236	249	268	271
Union toluene subst.	215	218	220	222	223	223½	224	224½	226	232	240	240
Shell "D" naphtha	300	306	310	314	318	322	326	332	340	352	360	377
Union No. 20	289	295	300	304	308	314	322	330	342	360	378	382
Std. Oil 300-400° F	316	324	331	334	340	346	351	357	366	380	405	405
Union xylene subst.	269	271	272	273	274	274½	275	276	278	280	284	286
Union L. A. P. No. 20	284	302	310	318	325	331	336	342	350	358	370	370
Deep rock spirits	335	340	343	346	349	354	358	362	368	378	387	394
Union No. 30	312	324	332	340	348	355	362	370	378	390	397	406
Union No. 40	364	370	373	375	378	380	384	388	392	400	412	415
Union L. A. P. No. 40	367	372	374	378	380	384	387	391	396	404	412	418

L. A. P. signifies low anilin point.

Detroit Club

R. J. Pohl presented the following paper on behalf of the Detroit Paint and Varnish Men's Production Club:—

Accurate Gloss Measurement by a Practical Means

Ever since the first intentional variation in gloss was made in a batch of paint there has been the need of some accurate means of measuring the gloss of a finished coat, the measurement of which would transmit to others a definite idea of the particular gloss measured or in mind. The first rating of gloss was accomplished by different nomenclature, the terms "flat," "eggshell," "satin," "gloss" being terms familiar to every paint maker. As four or five terms were not enough to give an accurate idea of the gloss in mind, qualifying adjectives were added. The resulting terms were almost as confusing as they were helpful because of lack of a standardized interpretation by different observers.

Several other needs for accuracy in designating the gloss of finishes soon arose. One was occasioned by the "glossing" of materials stored in the wet. Great difficulties were frequently encountered in keeping repeated batches of a product uniform due to the glossing up of the stored standards to which the new batches were matched. Another need arose from the change in gloss due to depreciation of a finish on exposure. Since depreciation of a finish on exposure is, in most instances, accompanied by a comparative loss in gloss, an accurate method for measuring the gloss would be a means for measuring the breakdown of the material under test.

Obviously, there is a need for a means of actually measuring the gloss and designating it in figures. Several instruments for measuring gloss, called glossimeters

or glarimeters, have been invented and placed on the market. Some of them have been good, but evidently all have had serious objections, judging by the very small number in use. Among these objections may be enumerated the cost of the instrument, difficulty of manipulation, lack of portability, susceptibility to differences in color, lack of accuracy at the extremes of the scale, and the fact that most of them measure only a small area which may show small local irregularities in the same sufficient to affect the measurement.

The writer's first attempt at developing a new means of measuring gloss introduced the use of the blending disc, similar to that used for blending various colors. Two slotted discs, one high gloss, the other dead flat, were interlocked in such a way that various sectors of each could be exposed, and these mounted on a shaft and rotated. It was found that different degrees of gloss were obtainable by this method, but the mechanical difficulties were so great as to make the device impractical. Even the slightest vibration of the motor or unevenness of the disc caused a scattering of light which increased the sensation of flatness and gave a false reading.

Visual Measurements

It is logical to assume that the most practical way to measure gloss would be not by theoretical optical means, but by the more practical visual method. By "optical" is meant the measuring of the light diffused and specularly reflected from a surface by means of optical instruments and drawing comparisons from these measurements. Visual refers to the sensation experienced in viewing a finish, and especially in viewing the image of an object reflected in the surface. It is this visual sensation which decides the sheen to be desired in a product, and which, off hand, classifies the degree of gloss of a material. Such an evaluation naturally introduced the personal element and with it variations in interpretations because of lack of standardization in terms used. Paint testers commonly make comparisons in gloss by viewing the image of some object, like the cross bars of a window, in the surfaces compared.

Based on this common practice it thus remained only to provide some fixed standard for comparison so as to eliminate as far as possible personal opinions among different testers. Apparently panels of various degrees of gloss would provide the standards needed. It was thought that these standards could be made from ground glass because of its great permanency, but it was found impossile to grind different sheens on glass to a predetermined standard. Flat clear lacquers were the next choice. They are easily made to different sheens and can be sprayed on glass panels to imitate ground glass. Furthermore, flat lacquers are made of grinds of a pure material like aluminum stearate and cold cuts of the various ingredients, standardization of which is easily possible. The use of varnishes or other cooked materials would introduce additional problems in standardization of materials used and thereby greater possibilities for error. Deciding on the flat lacquer, it then remained to find some method of preparing the proper series of different sheens and one that could be duplicated with reasonable ease and accuracy.

A flatting paste was made by grinding aluminum stearate in a cotton solution in a one-gallon mill, using a porcelain crock and flint pebbles. A clear gloss lacquer was made up of the conventional cotton, dewaxed damar, plasticizer and oil type. Several series of mixtures of the gloss lacquer and the flat paste were made in order to arrive at a suitable sequence in proportions for the standards. It was necessary to select a method with easy manipulation and the necessary accuracy.

It was found impossible to arrange the series by direct proportion or arithmetical progression, the flatter finishes in the series being too close together, and the glossier ones too far apart and inaccurate. However, by trying different mixtures, it was found that whenever two lacquers bore a paste content in approximately the ratio of 3 to 2, the difference desired was obtained regardless of whether it was in the glossier or flatter range of the series. In other words, geometrical progression gave the sequence desired.

Arrangement of Scale

The next step was to select the extremes of the scale. The lower end must be a dead flat; that is, one in which definitely no gloss could be perceived. The upper extreme of the flat lacquers must be close enough to the clear lacquer or high gloss to be only one small logical step away from it. The calculation of the geometrical means or the ratio between successive lacquers was then done mathematically. It was found also in making up various series that regulation of the lower or flat end of the scale could be effected by the proper selection of the first lacquer or the starting point. An excess of paste in the first lacquer put the standards closer together at the lower end of the scale. The steps between successive lacquers in the middle of the scale varied accordingly by the variation of the ratio. The upper or glossy end of the scale could be regulated to some extent by the gum content of the clear lacquer, the higher gum content putting the standards closer together at the upper end of the scale. It was found by trial that the glossiest flat lacquer, in order to be properly close to the straight gloss lacquer, must contain less than one-half of one percent of flat paste. The proper composition of the clear lacquer, after several trials, was selected as 7.5 percent ½ Sec. RS cotton, dry basis, 4.5 percent dewaxed damar, 3.0 percent dibutylphthalate, and 1.5 percent blown castor. After various trials, the selection of the first or flattest lacquer was made at 31.25 percent flat paste by volume, 11 fluid ounces of the clear and 5 ounces of the paste making a convenient mixture.

The calculation of the geometric means in order to give the ratio for the intermediate steps was as follows:—As the number of points from dead flat to highest gloss was arbitrarily chosen as one hundred, No. 00 was assigned to the dead flat and No. 100 to the straight gloss lacquer. After trial, ten steps from dead flat to high gloss were deemed sufficiently close since it was possible to interpolate between the standards. Therefore, No. 90 was assigned to the glossiest flat lacquer. There being then nine steps from 31.25 percent paste to 0.5 percent paste, the calculation was as follows:—

$$31.25 = .5\ r9$$
$$r9 = 62.5$$
$$\log r9 = \log 62.5$$
$$9 \log r = 1.7959$$
$$\log r = 0.1995$$
$$r = 1.585$$

The nearest simple ratio is 16 to 10, and gives a paste content of less than 0.5 percent for the glossiest flat lacquer.

The formulae adopted for the bases were as follows:—

Flat lacquer paste.
(All by weight)
4 oz. ½ in. RS cotton—dry basis.
16 oz. aluminum stearate.
1 oz. dibutyl phthalate.
10 oz. ethyl alcohol, including alcohol in cotton.
13½ oz. ethyl acetate.
3 oz. butyl acetate.
4 oz. butyl alcohol.
13½ oz. toluol.

Grind eighteen hours in a one-gallon porcelain mill with stone pebbles. The above gives proper size batch for such a mill. The mill should be one-half full of one-inch flint pebbles.

Clear Gloss Lacquer.
(By weight)
7½ percent ½ in. RS cotton—dry basis.
4½ percent pale dewaxed dammar—solids basis.
3 percent dibutyl phthalate.
1½ percent blown castor.
4 percent methyl alcohol.
7½ percent ethyl alcohol, including that in cotton.
6 percent butanol.
3 percent ethyl acetate.
18 percent butyl acetate.
40 percent toluol.

100 percent total.

Preparation of Standards

In a 16-ounce graduate were put 11 ounces of clear lacquer and 5 ounces flatting paste by volume. This was mixed thoroughly and 6 ounces poured off into a container labeled No. 00. To the 10 ounces remaining in the graduate 6 ounces of the clear were added, refilling the graduate to the 16-ounce mark. This was mixed thoroughly and 6 ounces poured off into a container labeled No. 10. This process was repeated, each time adding 6 ounces of clear to the 10 ounces of flat remaining in the graduate to form the next glossier lacquer in the series until No. 90 was obtained. For No. 100 the clear lacquer without any flatting agent was used.

In preparing the panels, glass slides size 2½ by 8 inches were used, although other sizes could be used as well. The backs of all panels were first sprayed with flat lacquer prepared like sample No. 00. Then by laying the panel flat and spraying one ordinary wet double coat on the face of the panel one panel each of the standard lacquers was prepared. The panels were laid flat to prevent as far as possible orange peeling and silking which might affect the gloss. The panels were labeled to correspond with the samples of wet lacquer. In using these panels it was found preferable to lay them on some flat black surface. Black velvet was found very good for this purpose. It was found necessary to back the panels with a flat lacquer because otherwise the glossier panels would show double reflection, one from the face of the glass and one from the back. Flat lacquer applied to the back of the panels transmitted the light away from the glass and scattered it into the black velvet underneath.

Instead of just holding the panels up to a window or any other object to get an image reflected it was found convenient to construct a box to contain and display all the standard panels at the same time, and leave room for sample panels to be placed immediately above them. The cover of the box was made of glass sprayed with flat lacquer (ground glass would do as well), and this was then masked off to leave crossbars and sprayed with flat black japan. The crossbars were ¼-inch wide and 2¼ inches apart, and furnished the image for reflection in the panels. The light used should not be strong enough to cast shadows of the crossbars on the panels. If it is too strong, a white cloth thrown over the cover will give the extra diffusion necessary.

In using this equipment the cover is raised to an angle and the image of the crossbars viewed in the standards and the panels under test. An intensity in reflected image in the sample similar to that in one of the standards indicates a similar degree of gloss in the two finishes. Thus by using the number on the standard panel in the series, a gloss rating or evaluation is given. For example, a finish is put in the apparatus and the images of the crossbars noted in its surface and in those of the standard panels. It is found the intensity of the image of the crossbars in the finish is similar to that in the surface of standard No. 30. Accordingly, the gloss of the finish is rated at 30. By means of these standards it was found that readings could be made independently of color and with very little trouble, a few seconds being generally all that was necessary to take a reading. After a little experience an observer could interpolate between two standards generally to an accuracy of two points. Putting the panels in a box also serves to protect them from dust. Unnecessary wiping should be avoided. Large panels can be read by holding them in front of the box close to the panels. For fixed objects like the walls of a room the standards can be removed from the box and held against the object.

The apparatus becomes of greatest use if it can be made sufficiently accurate so that different operators at different locations can prepare standards close enough to be able to communicate with each other in the figures obtained by these readings, and have their results check. As the ratio between two successive standards is 16 to 10 it should be easy, with reasonable care, to keep the formulations accurate enough so that any error would be small in comparison to this ratio. Therefore, the variation between given standards in sets prepared by different operators should be small in comparison to the difference between two successive standards of the same set. Several series prepared by the writer over a period of months showed a check of two points or better on the scale of 100. Comparison of series prepared independently by different operators working from the formula given above showed a maximum variation of three points. Due to unavoidable wiping, handling, etc., it would probably be advisable to prepare a fresh set of standards every year or even six months, a fresh paste and gloss lacquer being prepared each time.

Several means of standardization for the purpose of making a set comparable to those of other operators are possible. One is by means of a glossimeter such as the Pfund. Pfund readings have been taken on sets prepared as described with the following results:—

Panel No.	Milliamperes	Panel No.	Milliamperes
00	327	60	366
10	332	70	370
20	336	80	374
30	344	90	377
40	352	100	381
50	359		

Another method is by microscopic examination. The flattest slide appears under the 60 power microscope to be evenly rough over the whole area. As the gloss in successive panels becomes apparent, small canals appear under the microscope as shown by the accompanying photographs. The canals are barely visible in No. 10. In the glossier standards their appearances change, the flat areas practically disappearing on standard No. 90.

Still another method of checking the standards is by noting how far toward the flat end of the scale the crossbars of the cover are visible when viewed at different angles. This is probably the least trustworthy method due to the difference in eyesight among observers. One set of results obtained was as follows:—

As close to perpendicular as possible to get the image of the crossbars, angle about 5 degrees, No. 50 plainly visible, 40 not visible.

Angle 39 degrees 40 barely visible.
Angle 53 degrees 30 barely visible.
Angle 68 degrees 20 barely visible.
Angle 80 degrees 10 barely visible.
No. 00, bars not visible at any angle.

Summary

This paper presents a method of measuring gloss:—

1. Accurate considerably beyond the old system of nomenclature.
2. Independent of local irregularities—considers the whole area instead of a small spot.
3. Practical—measures by means of appearance to the eye.
4. Easily manipulated—readings can be taken in a few moments.
5. Convenient—portable, and can be used on large and fixed objects.
6. Independent of color.
7. Inexpensive—can be made at a very low cost.

Acknowledgment

The writer wishes to acknowledge the assistance of V. L. Smithers, Inc., Akron, Ohio, through whose courtesy the Pfund readings were obtained, and of Curtis A. Ballard, of the Rinshed-Mason Company, who has taken the photographs.

Louisville Club

P. S. Eddy presented the following paper for the Louisville Production Men's Club:—

Glycerol Phthalate Resins in Quick-Drying House Paints

The purpose of this year's work was to determine the effect of varying the pigment volume on alkyd resin house paint using resins of three different degrees of hardness. Exposure tests were made of five pigment combinations of three different pigment volumes with each of three resins. Exposure tests were also made of the three clear resin solutions and a 100 percent phenol formaldehyde 50-gallon varnish.

Standards

Standard No. 1 was made on the following formula recommended by the producer of the lead in oil for two-coat work on southern yellow pine.

First Coat

100 lbs. soft paste lead.
2⅛ gals. raw linseed oil.
¾ gal. turpentine.
⅛ gal. drier.
Pigment volume 28½ percent.

Second Coat

100 lbs. soft paste lead.
2¼ gals. raw linseed oil.
¼ gal. turpentine.
⅛ gal. drier.
Pigment volume 27¾ percent.

Standard No. 2 consisted of 75 percent lead carbonate and 25 percent zinc oxide in linseed oil having 28 percent pigment volume.

Resins

Three resin solutions were used which had the following constants:—

Constants of resins.	A hard.	B medium.	C soft.
Acid No.	15.9	11.7	34.0
Sp. gr.	1.122	1.10	1.082
Lbs./gal.	9.35	9.17	9.00
Gal./lb.	0.107	0.109	0.112
Constants of resin solutions.	A hard.	B medium.	C soft.
Non-vol. percent.	42.	45.	50.
Lbs./gal.	7.60	7.62	7.66
Lbs. non-vol./gal.	3.20	3.43	3.83
Viscosity (G-H)	H	D	A-B

Alkyd Paint Formulas

Series.	Pigment.	Pigment Volumes.		
1	100% sublimed lead	32%	35%	38%
2	75% sublimed lead, 25% zinc oxide	32%	35%	38%
3	65% titanox B, 35% zinc oxide	27%	30%	33%
4	50% titanium oxide, 20% zinc oxide, 7½ asbestine, 22½ silica	27%	30%	33%
5	50% zinc oxide, 50% zinc sulphide		21.5	

Color

Series 1, 2, 3 and 4 were made only in white. Series 5 was made in buff and light green. Standard No. 1 was made in white, buff and light green. Standard No. 2 was made in white only.

Buff and light green were tinted from white with ferrite yellow, lampblack and chrome green in linseed oil.

Panels

The panels used for the tests were 8x20x¾ boards of southern yellow pine. Two coats were brushed on fronts, blacks and edges, except series 3, which had three coats. The panels were exposed in Louisville on the roof of a four-story building at 45 degrees facing south. Two panels of each alkyd paint were prepared and three of the standards.

Time Between Coats

Twenty-four hours were allowed between coats of the alkyd paints and one week for the standard linseed oil paints.

Time of Exposure

The panels were exposed February 15, 1932, and were given final inspection October 7, 1932.

Condition of Paint in Cans After Ten Months:

Standards all in good condition.

Series 1. All in very good condition and easily stirred up. Resin C settled the least and resin B the most.

Series 2. Resin A slightly bodied. Resin B liquid had tendency to jelly. Paint broke up lumpy. Resin C liquid jellied so badly the paint could not be stirred up.

Series 3. Resin A jellied completely before settling. Resin B in good condition with crisp skin on top. Resin C in good condition with crisp skin over settled pigment.

Series 4 and 5. All in good condition.

Results of Exposure Tests

Series 1. This series of panels was poor in general appearance, being gray and dirty. They were chalking considerably and beginning to fail by scaling along cracks which followed the grain of the wood. There was little or no difference between the three resins or the three pigment volumes.

Series 2. This series was poorer in general appearance than Series 1, being dirty and also scaling worse. Resin A panels were cracking and scaling more than the other two resins. Little difference could be noted between three pigment volumes.

Series 3. This series was fair in general appearance. Resin A panels were cracking and scaling the most. Resin B panels were a little better but scaling some. Resin C were the best in the series, having no cracking or scaling. There was no difference between the three pigment volumes.

Series 4. This series was very good in general appearance, all panels chalking some but being very clean and white. Resin A was failing slightly by grain cracks and scaling. Resin B was slightly better than Resin A, although there was some scaling. Resin C was best in the series, having no cracking or scaling. There was no difference between the three pigment volumes.

Series 5 (Buff). This series was good for color retention and general appearance. All were failing by cracking and scaling, resin A being the best and resin C the worst.

(Light green). All good color retention. Scaling and cracking much worse than buff. Resin A was slightly the best and no difference between resin B and resin C.

Standard No. 1 (White). General appearance very poor due to dirt collection. Chalking slightly. A few wood cracks and some scaling.

(Buff). General appearance very poor. Paint in good condition but very dirty. Color retention very poor, badly faded. No chalking.

(Light green). General appearance very poor. Very dirty and color retention very poor. Paint failing by heavy chalking and some wood cracks.

Standard No. 2 (White). General appearance fair. Paint was failing by some cracking and scaling.

Clear panels. Resin A best in general appearance. Good gloss. Resins B and C showed very bad wood discolorization under the film. There was considerable wood cracking. The gloss was fair. The phenol resin varnish was in fair condition. There was some loss of lustre and some cracking and peeling.

Summary

Application:—There was no comparison between the brushability of the oil paints and the alkyd resin paints which pulled under the brush. Resin A paints were hardest to apply and resin C the easiest.

Covering:—The paints with the high pigment volumes used in series 1 and 2 gave fair covering in two coats. There was a noticeable increase in covering with the increase in pigment volume. In series 3 lower pigment volumes were used, and these paints failed to cover adequately in two coats; therefore, it was necessary to apply a third coat. Series 4 gave fairly good covering with all pigmentations.

Series 5, which were tinted, gave good covering. The standard paints in all colors covered very well, due to their having a far higher percentage of base than the alkyd paints.

Resin hardness:—In all paints except series 5, which were the colors, the softer resins gave paints of greater durability due, no doubt, to slightly higher base content, and perhaps also to the better distensibility of the film. Although it was not yet shown by any apparent failure of the film, the condition of the wood indicated that moisture was entering the panels more with the softer type resins. The panels of the clear liquids proved this without any doubt.

Series 5 (The tints). Gave different results than the white, the harder resin showing the best results. It was the

opinion of the committee that the linseed oil added with the tinting color and the oxidizing effect of the chrome green changed the characteristics of the paints.

Pigment volume:—It appears that variation in pigment volume has little or no effect on the durability of alkyd paints. The characteristics of the pigment, its covering power; bulking value, and inherent effect on the film, and the type of resin have far greater effect on the workability and durability of the paint. For example, a lower pigmentation of a high covering pigment appears to give superior durability and workability.

Pigments:—It is apparent from the work in 1931 and 1932 that low covering pigments are not practical, as too high a pigmentation is necessary with a resulting effect on workability. Both years' work have proven that the formula 50 percent TiO_2, 20 percent ZnO and 30 percent inert is a good starting point for further investigation.

Number of coats:—The work of 1931 and 1932 has, in the minds of the committee, definitely proved that two-coat work gives results which are not dependable. A different type of failure results due, no doubt, to moisture passing through the film too readily. An excessive expansion and contraction of the wood, and failures of the film by scaling and peeling, results in paints which otherwise would fail by chalking or checking.

Comparison with standards:—There is no doubt that so far in the exposure the alkyd paints are far better in appearance than the standards and, no doubt, will continue to be for the life of the paints.

Series 4 is equally as good in durability and protection to the wood. The other series, however, are failing more generally and are less efficient in wood protection.

Storage qualities of the paint:—It is evident that the paints of series 2 and 3 with their high zinc content are not safe, and will never be practical because of jellying or "livering" action. Series 4 and 5, although containing zinc, carry it in smaller concentrations and will, no doubt, be safer.

Montreal Club

G. Fearnley presented this paper for the Montreal Paint and Varnish Production Club:—

Causes of and Remedies for Paint Failure on Plaster Surfaces

The obtaining of satisfactory results in the painting of plaster has given the paint manufacturer much trouble and plenty of scope for thought in the past, and in many cases still is giving cause for worry. The New England club last year dealt with "Surface Conditions of Wall Plaster as They Affect Paint." This paper dealt almost exclusively with the preparation and application of plaster, giving brief accounts as to how the various components which make up plaster are obtained and the results which would be obtained should these components not be properly prepared and mixed. Several textbooks and articles are available on the subject of plaster preparation so this phase will only be slightly touched in the present paper, our work being confined to the obtaining of satisfactory results with paint after the plasterer has finished his work, immaterial as to whether his work was a credit or discredit to his trade.

It is essential, if the paint manufacturer is to compete with the wallpaper manufacturer, that his goods be entirely reliable and trustworthy. A satisfactory finish in every way must be obtained every time. The majority of paint manufacturers are alive to this situation, and have spent a great deal of time and money on perfecting flat wall paints. These paints are satisfactory in themselves, but the surfaces over which they are to be applied are not well known or understood as are wood and metal surfaces, and different modes of preparation are required. Primers which are satisfactory for the older types of surfaces which we have been called upon to protect do not work in the case of plaster. The painting of plaster is, in the majority of cases, a matter of decoration, of beautifying and not preservation. Curious as it may seem, we have to devise a method of protecting the paint from the devastating effects of this new surface, and not as in other cases, a means of protecting the material painted from the adversities of the elements. With this knowledge before us, we have endeavored to ascertain what these devastating effects are and how to overcome them.

Gardner (Scien. Sec. Circ. No. 299) states that if the surface has been freshly made or contains any substantial amount of free lime, the surface should be treated with a neutralizing solution of 20 percent zinc sulphate. In place of this aqueous treatment or in addition to it, a primer made with a high-grade flat paint reduced at the time of application with a tung oil liquid is suggested. In a later work (Scien. Sec. Circ. No. 405) he states that the use of small plaster panels for testing of primers is entirely unsatisfactory, as it is well nigh impossible to make different batches of panels uniform in character, but follows this statement with the remark that the majority of primers at present on the market are satisfactory when properly applied under practical conditions.

Dealing with the surface conditions of wall plaster Atwood (Scien. Sec. Circ. No. 404) states that plaster mixes vary considerably owing to the thickness or thinness of the lime putty requiring more or less gypsum to give a mixture plastic enough to work. He then goes on to say that the presence of retarders is harmful, and that the failure of the paint film is mostly due to the saponification of the linseed oil by the lime in the presence of water. Quick lime may be present in the surface as a result of inefficient slaking and will cause powdery spots, or hot spots.

Results of English Research

The Building Research Board of England in their work on building materials state that the failure of paint on plaster surfaces is due to the saponification of the vehicle by alkalies present as impurities in some of the components of the plaster. Free lime has little or no effect on the paint film in their opinion. Failure of the paint only takes place in the presence of moisture. Chemical pretreatment is thought inadvisable owing to alkalies being retained at a greater depth, and being brought to the surface by moisture during the process of drying. They state that promising results have been obtained by the use of a tung oil resin primer.

At a round-table discussion on "Painting Over Plastered Walls" of the Louisville club the consensus of opinion appeared to be that painting was rendered difficult due to improperly applied plaster, inferior sizes, such as gloss oil, glue or shellac, too many coats of paint being applied, and the poor quality of some of the paints at present on the market. Long oil primers were found to give satisfactory results under gloss paints.

From these few references it is evident that there is a great diversity of opinion as to what really causes the failure of paint on plaster surfaces. Having unearthed these references after our first series of panels using various types of primers had shown none of the failures we looked for, a survey of the plastering trade in and around Montreal was made. The survey took in small and large contractors and attempted to collect data on the various practices at present in vogue for the mixing of plaster and its components, such as the mixes used and whether prepared hydrate of lime was used or whether quicklime was slaked on the job. If the latter practice was in vogue then the methods used for slaking were ascertained. This survey yielded some rather useful information as to the procedure in this district.

Montreal Survey

Contractor "A" uses the following scheme:—

Rough Coat: On Wood

1 part rock wall plaster.
2 parts sand.

On Metal Lath

1 part rock wall plaster.
1½ parts sand.

On Brick

1 part rock wall plaster.
2½ parts sand.

A scratch coat of the same mix as the rough coat is applied over the rough coat when working on metal lath.

Finish Coat

2 parts commercial hydrate of lime.
1 part plaster of paris.
½ part hard wall plaster.

According to the contractor, if hard wall plaster is not added to the finishing coat, the mix becomes too hard and brittle, and is not plastic enough to give good sealing properties and, consequently, leaves a possible excess of suction. Proper sealing cannot be obtained with one coat of white finishing, but good sealing is obtained by applying a white scratch coat and allowing to set, then applying a second coat of the same material. The second coat is allowed to come almost to final set before being given a water polish.

More paint failures are caused by poor practice in plastering than by poor materials. Some failures may be caused by the use of improper sands in the rough coat. Some sands containing impurities which interfere with the proper setting of the gypsum with the result that a poor finish is obtained. Certain of these impurities precipitate on the surface of the plaster discoloring the surface, and which, if painted over, bleed through the finish applied, even destroying wallpaper in certain cases.

Another fault which causes trouble, in this contractor's opinion, is when hard wall plaster is being applied. The mechanic may add water to the mix after it reaches his board to make troweling easier, causing the set of the plaster to be halted, with the result that the sand runs and forms a honeycomb pattern in the rough coat. The final result of such treatment is a patchy surface which when painted over gives a succession of glossy and flat spots, a fault all too often blamed on the paint.

He then goes on to say that the use of hot lime on the job today is very rare, but, even where it is used, very few of the failures are due directly to the lime, but rather to poor practice of building construction in general, such as lack of proper ventilation behind plaster surfaces for drying out the plaster, in sufficient labor to properly work and seal the plaster surface at the time of application, skimping the use of proper materials and overloading with cheap material in order to meet competitive prices that do not allow for a first-class job.

The use of chemical retardents should not be allowed, as they will generally cause trouble through efflorescence. They have to be resorted to, however, in some cases, as, for instance, in high plaster of paris mixes for heavy cornice work, in order to slow the set and allow for moulding, but should always be avoided in straight plaster work.

Another Method

Contractor "B" uses the following scheme:—

Rough Coat

1 part hard wall plaster on metal lath.
2 parts sand.

Scratch Coat

1 part hard wall plaster.
3 parts sand.

Finish Coat

3 parts commercial hydrate of lime.
2 parts white rock wall plaster.

This contractor claims that just as good a plaster surface can be made from the old hot lime putty method as from our more modern and convenient practice of hard wall plaster, providing that a price which allows of the proper practice of application and good labor be obtained. In the opinion of this contractor price is the root of all trouble, for if the contract price is high enough to permit the use of the amount of labor necessary to properly apply, thoroughly seal and polish the surface, then given normal drying time and sufficient ventilation, there will be no cause for paint failure. Should proper ventilation be overlooked the chances are that the moisture will force itself through to the surface of the plaster, raising the paint film if already applied. This particular fault is most noticeable when the building is heated.

In certain cases where low prices are demanded, poor practice due to the cut prices have even caused the failure of the plaster itself, rather than wrong or poor material.

Contractor "C" slakes his own lime as follows:—

The burnt lime is placed in a barrel or box, containing probably 150 pounds, shortly after lunch time. This is covered with water with about two inches over and above the top of the lime, and the box is covered with jute sacks, boards, etc., and left in this condition until nearly stopping time at night. It is then agitated with a mortar hoe, if the water still appears to be in excess it is left to stand as it is overnight; if there is no excess of water sufficient is added to restore the excess, and then left overnight.

The scheme used by this contractor is:—

Rough Coat

1 shovelful lime putty obtained as above.
3 shovelfuls white hard wall plaster.
12 shovelfuls pit sand, sieved through ⅛ in. mesh.

White Finish

1 shovelful lime putty.
3 shovelfuls plaster of paris.
1 bag white rock wall plaster.

The white finish is troweled on, allowed to come almost to final set and then wet polished.

It is the opinion of this contractor that if the plaster surfaces are allowed to dry out properly at normal temperature for about two weeks there is no danger of paint failure, but if the temperature is not right for normal drying the paint may be spoiled by moisture but not by lime. He also stresses the importance of proper ventilation by leaving an air space behind the plaster, for where plaster is applied directly over brick walls, concrete blocks, terra cotta tile, etc., paint failures due to moisture seeping through the plaster will be encountered. Time must be allowed for all moisture to pass off through the plaster surface, before attempting to seal or paint it, or paint failure will result by the moisture being trapped and when of sufficient pressure, cracking of the paint film and peeling will result.

For this reason he advocates the use of one-inch furrings to be placed against such walls and lath supplied rather than using the wall as a surface for plastering.

Contractor "D" has for his scheme the following:—

Rough Coat

1 shovelful lime putty made by reducing commercial hydrate of lime to putty consistency and allowing to stand overnight.
1 bag white rock wall plaster
3 shovelfuls plaster of paris.
12 shovelfuls sand.

White Finish

1 shovelful commercial hydrate lime putty.
2 shovelfuls freshly slaked lime putty.
2 bags white rock wall plaster.
3 shovelfuls plaster of paris.

The addition of the freshly hydrated lime seems to make the surface hold the water better and take a better polish with easier troweling. Given proper drying conditions, this contractor sees no reason why paint should be affected in any way.

Contractor "E" uses commercial hydrated lime such as "Limo" for rough coats. He would not use anything but a calcium-magnesium lime for finishing coats, as he claims high calcium lime cannot be successfully used. The lime is mixed with water to the consistency of a putty, allowed to stand overnight and then mixed with plaster of paris only. This party was reluctant to give proportions. He stated that very few plasterers used quicklime today.

Contractor "F" slakes his own lime for all his mixes, allowing it to stand overnight as a putty, but would not volunteer any further information as to his practice.

It would now be as well to more fully explain the experimental work which we have done, a brief outline of which was presented at last year's convention (Scien. Sec. Circ. No. 404). As stated in this outline, the problem was divided into seven sections, with an eighth being added a little later. The instructions issued to each of the sections were as follows:—

Section 1
Alkalinity Determination on the Surface of Plaster

Preparation of Sample:—The sample for analysis shall be taken from the surface of the panel in the following manner. A strip half an inch in width shall be removed from the surface of the panel at one end, then a strip 2½ inches in width shall be marked off, a half-inch strip on either side of this width shall be removed, the remainder, which will be 3 inches by 2½ inches, shall constitute the samples and shall be removed to a depth of approximately 1/32 inch and weighed. The same weight shall be taken each time. Before obtaining the next sample another half-inch shall be removed on the three sides in exactly the same manner. By this method three sets of determinations can be made from each panel, thus minimizing the number required.

Determinations required:—Free moisture. This shall be determined on the sample as obtained above by heating to constant weight in an oven at 40 degrees C. The difference in weight being free moisture.

Carbon dioxide:—After the moisture determination carbon dioxide shall be determined on a portion of the dried sample, by decomposition with hydrochloric acid and absorption of the carbon dioxide in an Ascarite tube and weighed.

Calcium hydroxide:—Another portion of the dried sample shall be boiled with a known amount of sodium carbonate, and the caustic and carbonate alkalinities titrated afterwards with the use of phenolphthalein and methyl orange indicators, calculating the caustic alkalinity to calcium hydroxide.

Making the tests:—The determinations shall be run each day at as near the same hour as possible for one week after the manufacture of the panels, then every third day for two weeks, then at intervals of one week for six weeks. This will carry the tests over a period of two months. All panels required must be obtained at the same time, and if the tests are carried out as above, six panels will be required. In order that duplicate determinations may be run when necessary twelve panels should be obtained at the commencement of the work.

Section 2
Pre-treatment of Surface with Chemicals

Method of treating panels:—Panels shall be treated with water solutions of the following:—Zinc sulphate, aluminum sulphate, sulphuric acid, acetic acid and magnesium fluosilicate. The strength of the solutions shall depend on the amount of each chemical to be added to the plaster surface. This amount is to be obtained by calculation so that sufficient of each is added to neutralize the calcium hydroxide present. This figure will be supplied after the first day's tests under section 1. The amounts added shall be expressed as pounds per square foot of surface.

Panels shall also be treated with a wash coat of plaster of paris. By wash coat is meant that a thin coat of plaster of paris shall be uniformly applied over the entire surface of the panel, so that the voids are filled and the entire surface is covered, but the thickness of the panel or in practical work the finishing coat, shall not be materially changed.

Duplicate results of each treatment are required for exposure purposes.

All panels must be treated within forty-eight hours of their manufacture, and time should be allowed for Section 7 to do the painting within forty-eight hours after they have been treated.

Section 3
Sealing With Solutions of Glue, Etc.

Method of Treating Panels:—Panels shall be treated with solutions of ordinary granulated or ground glue, fish glue and casein glue. The solutions shall be made up by allowing the glue to soak in cold water until soft and then warming in a water bath until all is in solution. The ground glue and fish glue shall be made up in the proportion of two pounds of glue in a gallon of water. The casein glue shall be made by mixing three pounds of the glue to a stiff paste with water and when free from lumps adding sufficient water to make up to a gallon. The water in this case must be between 50° F. and 70° F. It must be remembered that solutions of casein glue do not keep very long, and the solution should be made just prior to being applied. Dupliate panels are required.

Materials to Be Used:—The ground glue shall be a good quality hide or bone glue, the fish glue, a good quality fish glue, and the casein glue a lime-soda-phosphate casein glue. These can be supplied by the technical committee if desired.

Section 4
Sealing With Cold Cut Solutions of Gums

Method of Treating Panels:—The panels shall receive one coat of four-pound cuts of the following types of resins:—Shellac, limed rosin, glyptal, bakelite, vinylite and manila. The shellac shall be cut in denatured alcohol of the formula No. 1 benzine. The balance of the resins shall be cut in toluol. The shellac shall be first quality, bleached, dried shellac. The limed rosin shall be a 4 percent limed rosin. The vinylite type of resin will be supplied by the technical committee owing to the difficulty of its preparation. The glyptal and bakelite type resins shall be prepared as under:—

Phenolic Type-100 percent. 100 parts phenol, 60 parts formaldehyde, and 1 part of concentrated sulphuric acid. As this requires skill to manufacture and is dangerous on account of the liability of explosion, the technical committee prefers to make it, unless those working on this section wish to take the risk, and, if so, further instructions will be given.

Phthalic-Glycerine Type-100 percent. 100 parts phthalic anhydride, 25 parts oleic acid and 62½ parts commercial glycerine. Heat the mixture in an aluminum kettle at 430° F. until a quite brittle resin is formed. Allow to cool and check acid value. This should not be greater than 30.

A commercial type of the phenolic and the phthalic-glycerine resin shall also be included. These will be supplied by the technical committee who will not disclose their identity.

Section 5
Sealing With Oils and Oil Varnishes

Method of Treating Panels:—Panels shall be treated with the following:—

(a) Linseed oil, which has been cooked to 560° F. for three hours and driered with 0.5 percent lead and 0.05 percent manganese, in the form of either resinate or linoleate. The treated oil shall be cut with 25 percent mineral spirits to bring it to a brushing consistency.

(b) Chinawood oil, which has been cooked to 400° F. for one hour and driered with 0.25 percent lead and 0.025 percent manganese in the form of either resinate or linoleate. The treated oil shall be cut with 25 percent mineral spirits, to bring to a brushing consistency.

(c) Long oil varnish, composed of chinawood oil 14.3 percent, linseed oil, 21.4 percent, 4 percent limed rosin, 11.9 percent, basic carbonate of lead 2.4 percent, mineral spirits 50 percent. The linseed oil shall be cooked to 560° F. for three hours, and set on one side. The chinawood oil and limed rosin shall be run together to 565° F. When at this temperature the hot linseed oil shall be added, and the whole brought up to 565° F. Cool to 550° F., hold for 1½ hours, cool to 525° F., and add the basic carbonate of lead hold 10-15 minutes, and cool to 480° F. and thin.

(d) Short oil varnish composed as china wood oil 4.4 percent, linseed oil 18 percent, 4 percent limed rosin 18.6 percent, basic carbonate of lead 2 percent, mineral spirits 56 percent. The linseed oil shall be cooked as above, and the china wood oil and limed rosin run to 565 degrees F., and checked with hot linseed oil, it shall then be cooled to 525 degrees F., and held there for two hours,

after which the basic carbonate of lead is added and held for another 10-15 minutes. It is then cooled to 480 degrees F., and thinned.

(e) Six portions of the linseed oil from (a) prior to thinning are to be thinned with a solution of rosin in mineral spirits in sufficient quantity to give acid value of the resultant mixture of 2.5, 5, 7.5, 10, 12.5 and 15. This will necessitate the acid value of the cooked linseed oil and the rosin solution being taken prior to mixing.

(f) Blown linseed oils having an acid number approximately 3 and 10 and cut with mineral spirits to a brushing consistency shall be used for the last set of panels.

Section 6
Sealing With Lacquers

Panels shall be treated with one coat each of the following lacquers:—

Formula 1

Nitrocellulose ½ sec	8%
Ester gum	18
Dibutyl phthalate	4
Ethyl acetate	9
Butyl acetate	15
Butyl alcohol	3
Toluol	21
Xylol	12

Formula 2

Cellulose acetate	11%
Glycol phtalate	8
Ethylene dichloride	54
Denatured alcohol	12
Methyl cellosolve	7
Methyl cellosolve acetate	8

Section 7
Painting of Panels After Preliminary Treatment

Immediately on receipt of panels from the various sections working on the preliminary treatments they should be examined to see that they are properly marked with section number and panel number, and that two panels of each number are received.

Marking of Panels (this applies to all sections):—The date of manufacture and date of treatment shall be plainly marked on the panels, together with the section number and a panel number. The method of marking shall be as follows:—The section number shall appear in Roman numerals and the panel number in Arabic numbers; for example, panel number four in section three would be marked as follows:—"III. 4."

Painting the Panels:—Each panel shall receive one coat of flat wall paint within forty-eight hours of the preliminary treatment and a second coat twenty-four hours later. The date and time of painting shall be marked on the panel. A note on the drying time shall be taken in order to determine whether the different preliminary treatments have any effect on the time of drying. In painting, first cover the whole of the surface in one operation, cross brush to insure an even film and then straighten out.

Exposure of Panels:—One of each of the different panels shall be exposed under normal atmospheric conditions in such a position that all panels obtain as near as possible the same amount of sunshine. The second panel of the various treatments shall be half submerged longitudinally in water at room temperature with the painted surface uppermost. This can be arranged by placing the panels on wire racks in a trough of water. It is important that the water level remain constant, and water should be added from time to time to replace that lost by absorption and evaporation.

Control Pane's:—Two panels shall be painted without any preliminary treatment within forty-eight hours of their manufacture, and receive the second coat twenty-four hours after the first. These panels shall be marked "VII. 1," and shall be exposed along with the other panels which have received preliminary treatment.

Paint for Panels:—The paint which is to be used throughout this work shall be made up to the following formula and tinted with prussian blue in oil, only, to the attached shade:—

Lithopone	53.9 percent
Zinc oxide	1.7 percent
Abestine	6.9 percent
Long oil varnish	28.4 percent
Mineral spirits	9.1 percent

The long oil varnish shall be the same as section 5, sub-section (c), and arrangements should be made with this section for a supply of this varnish.

Examination of Panels:—The panels shall be examined after twenty-four hours' immersion in each case and then at seventy-two hours. Afterwards periods of three days may suffice, this depending entirely on the results obtained. If results are erratic, examination shall be made at lesser intervals, whereas if results are uniform three days will suffice. This will have to rest with the sub-committee working on this section.

The nature of the paint film shall be determined at each examination, that is, whether the film still has good adhesion, has become brittle or soft, has lost bonding between pigment and vehicle due to saponification of the vehicle and become powdery. These qualities shall be noted in addition to such blemishes as blistering, peeling, cracking, checking, fading of color and lime burn. This examination applies to both sets of panels.

Section 8
Manufacture of Special Panels

This section has been created to take care of the manufacture of panels containing known and predetermined faults. It shall also collect data on the various practices at present in vogue for the mixing of plaster and its components, such as the mixes used and whether prepared hydrate of lime is used or whether quick lime is slaked prior to mixing with plaster or not. Ascertain whether the practice in this district is to use a straight calcium lime or calcium-magnesium lime in the finish coats. These investigations shall cover small and large construction jobs in order that our information be as complete as possible.

Panels Required

Soft Panels for Excessive Suction:—Shall be composed of hydrated lime, four parts, and plaster of paris, one part, the whole to be thoroughly mixed.

Hard Panels for Shrinkage, Cracks and Hard Spots:—Shall be composed of hydrated lime, one part, and plaste of paris, four parts, the whole to be thoroughly mixed.

Frozen Panels:—Shall be composed of hydrated lime, two parts, plaster of paris, one part, hard wall plaster, one part, the whole to be thoroughly mixed and then frozen for twenty-four hours, afterwards allowed to dry out under normal conditions.

Efflorescent Panels:—Shall be composed of hydrated lime, two parts, plaster of paris, one part, hard wall plaster, one part, calcium chloride, 2 percent, the whole to be thoroughly mixed and allowed to dry under normal conditions.

Free Lime Panels:—Shall be composed of hydrated lime, two parts, plaster of paris, one part, hard wall plaster, one part, the whole to be thoroughly mixed. Prior to final set overburnt, unslaked lime shall be incorporated in the surface of the panels, after which they shall be allowed to dry out under normal conditions.

Marking the Panels:—The reverse side of each panel shall bear a typewritten slip containing the following information:—

Type of panel.....
Treatment No.....
Date of manufacture.....
Date of preliminary treatment.....
Date of painting, 1st coat.....2nd coat.....
Date of immersion or exposure.....

The type of panel and date of manufacture shall be inserted by this section, the other headings being left blank for the other sections.

Section 9
Preliminary Treatment of Panels

Method of Treating Panels:—(a) Panels manufactured the same as the original panels shall be treated with kettle bodied linseed oil of acid value 6, 10 and 15; the acid value shall be controlled by the addition of linseed oil fatty acids.

(b) Panels as above shall be treated with aluminum sulphate and magnesium fluosilicate in such quantity as can be absorbed by the panels but not exceeding 2 fluid ounces of 11.5 percent solution of the former and 8.5 percent solution of the latter. These panels shall then be treated with solutions 7 and 8 of section 4, namely, commercial glyptal and commercial phenolic type resins.

(c) The panels manufactured by section 8 in an effort to reproduce blemishes obtained in plaster walls shall be treated with the above mentioned chemical treatment with and without the after treatment. They shall also be treated with kettle bodied china wood oil as used in section 5.

(d) Panels made containing 2 percent sodium sulphate shall be treated with solutions (a) and (b) of section 5, namely, bodied china wood oil and linseed oil and varnishes made according to the following formulae:—Phenolic type resin, 14.6 percent; china wood oil, 36.6 percent; mineral spirits, 48.7 percent, and one where the china wood oil is replaced by linseed oil.

Instructions as to the marking of panels similar to those outlined under section 7 were issued to each section, and by this means of identification a large number of panels have been handled expeditiously and without trouble. The panels used, with the exception of those described under section 8, were made according to the following:—Calcium-magnesium hydrate of lime, two parts; plaster of paris, one part, and rockwall plaster, one part.

The determination of the surface alkalinity has taught us a great deal. The uniformity of results obtained proves that it is poossible, with a little care, to prepare different batches of small plaster panels with the knowledge that results obtained from the different batches will be uniform. The panels used for this analytical work were not all made in the same batch, as it was necessary to continue the work further than had first been anticipated and fresh panels had to be obtained. If it were not possible to obtain such check results with different batches of panels, then the control methods at present in use in the various cement and plaster of paris works would have to be scrapped and new methods worked out which would give satisfactory results, as it is impracticable when testing plaster or cement for strength and the customary physical characteristics to use very large quantities which have been suggested by some of our contemporaries.

We also found that the whole of the calcium hydroxide in the panel to the depth of approximately 1/32 inch is not converted over to the carbonate. This finding tends to prove that the calcium hydroxide present in plaster surfaces has no effect on the paint applied after the plaster has been allowed to dry out properly prior to painting. The change from calcium hydroxide to calcium carbonate progresses uniformly for a period of six weeks, when all reaction seems to cease. It is possible, however, that if samples of microscopic thickness instead of 1/32 inch were taken we would find that the whole of the hydroxide had been converted to carbonate. During the drying of the plaster carbonation has a tendency to be a little more rapid than when the moisture is at a minimum; that is, the curve of carbonation flattens out as the moisture decreases. This will, no doubt, exp'ain why at the end of six weeks the surface contains approximately 20 percent calcium hydroxide and 26 percent calcium carbonate, with the moisture figure being only a trace. It is our belief, as stated above, that there is a film of calcium carbonate present in and sealing the surface in such a manner that the calcium hydroxide underneath does not come into contact with moisture and carbon dioxide from the atmosphere, and is, therefore, not converted to carbonate.

The water incorporated in the plaster during mixing dries out and reaches a constant after five days' storage under normal conditions. Should the amount of water in the mix be increased or should the p'aster be stored under conditions where ventilation is limited, then the drying time would naturally be lengthened. Whether this condition would materially affect the carbonation of the hydroxide or not we are not prepared to say. It could form a channel for further work at a later date.

The plaster pane's after twenty-four hours gave the following composition on analysis:—

	Percent.
Water	20.42
Calcium sulphate as $CaSO_4$	18.99
Calcium sulphate as $CaSO_4.2H_2O$	20.13
Calcium hydroxide	18.32
Calcium carbonate	1.36
Magnesium hydroxide	13.43
Magnesium carbonate	1.15
Ammonium alum	2.06

Based on this analysis, factors were worked out for converting the carbon dioxide to the mixed carbonates of calcium and magnesium and also for the conversion of caustic alkalinity to the mixed hydroxides of calcium and magnesium, so that where we have referred to calcium hydroxide and calcium carbonate, it is to be taken as being the combined amounts of calcium and magnesium salts in each case. The following table shows how the change from hydroxide to carbonate progressed at various times:—

Table 1

Hours of storage.	Moisture, percent.	Carbon dioxide on the dry sample, percent.	Ca & Mg carbonates on dried sample, percent.	Ca & Mg hydroxides on dried sample, percent.
24	20.42	1.50	3.41	39.90
48	9.60	2.54	5.78	36.90
72	8.05	2.55	5.80	36.54
96	1.15	3.27	7.44	33.52
120	0.35	3.67	8.35	32.35
168	0.35	4.71	10.71	31.64
288	0.35	5.94	13.51	29.57
360	...	6.80	15.47	28.83
504	...	7.72	17.56	24.61
672	...	9.88	22.47	21.60
840	...	11.60	26.38	20.10
1008	...	11.44	26.01	20.56
1340	...	11.55	26.26	20.24
1680	...	11.59	26.36	20.11

Chemical treatment of plaster surfaces, although universally advocated, does not give entirely satisfactory results, based on the work we have done. The treatments were based on the calcium hydroxide content of the plaster after twenty-four hours' storage and the analysis showed a content of 0.32 ounces of calcium hydroxide in the surface of the panel to a depth of 1/32 inch. Sufficient of the various chemicals to exactly neutralize this amount of hydroxide was made into two fluid ounces of solution. The strengths of the solutions were as follows:—

Sulphuric acid	5%	H_2SO_4
Acetic acid	6.1%	CH_3COOH
Magnesium fluosilicate	8.5%	$MgSiF_6$
Zinc sulphate	15%	$ZnSO_4.7H_2O$
Aluminum sulphate	11.5%	$Al_2(SO_4)_3.18H_2O$

It was found impracticable to apply these amounts of the chemicals to the panels. In the first three cases the whole panel would not absorb the amount prepared, and in the latter two cases very little of the solutions were absorbed. The panels were laid face up, the solutions brushed in until the panel had absorbed all that it would and a large excess was left on the surface.

In the case of the sulphuric acid treatment it was found that the solution was absorbed very rapidly, at first with slight effervescence; the absorption gradually slowed up until an excess remained on the surface. After drying, the panel presented a good surface. The acetic acid behaved in much the same way as the sulphuric acid, and on drying the surface showed a large amount of efflorescence. The magnesium fluosilicate gave a good surface when dry, and was absorbed in much the same way as the two acids. The zinc sulphate solution was very slow in impregnating the panel, but gave a good surface when dry, although a relatively small amount was absorbed. The aluminum sulphate was much slower, and the absorption less than was found with the zinc sulphate. A good surface was obtained when the panel was dry. The panels which were treated with the wash coat of calcium sulphate gave a very good surface when dry, and the coating "set up" immediately on being brushed onto the panel. Just sufficient was added to seal the pores without the thickness of the panel being affected.

The manner in which these treatments stood up as compared with the other treatments will be found later in the paper and in the tables.

Glue sizes alone have not been found satisfactory; possibly if pre-treated, or certain chemicals were added to the solutions to render the glue insoluble after drying, satisfactory results may be obtained, but it is doubtful, for casein glue is insoluble after drying, and this has not been found entirely satisfactory. The solutions of animal, fish and casein glue were made up according to instructions which appear earlier in the paper, and those of the animal and fish glues have no apparent difference, while the casein solution was a little heavier in consistency and appeared to seal the plaster more satisfactorily than the other two. One coat only of the solutions was applied to the panels.

Surprising Results

Surprising results were obtained when we used cold cut solutions of the various resins, some good, some bad. The synthetic resins appear to have an advantage over the natural resins which were tried; this condition also existed when they were used as an after treatment for the chemical coatings. It was impossible to try all the natural resins, and possibly some of those which were not tried would have given better results than those which we obtained.

The white shellac was a four-pound cut in methylated spirits (No. 1 benzine). Four per cent limed rosin was used in toluol, the solution being a four-pound cut. The glyptal type of resin was made according to the directions previously outlined and the finished resin had an acid value of 26.4, and was cut in four parts xylol and one part butyl alcohol, in the ratio of 40 of resin to 60 of solvent. The resultant solution had an acid value of 10.8. The phenolic type of resin did not turn out quite as satisfactory and contained free phenol. Its characteristics were acid value 125, and a softening point of 80 degrees C. A varnish was made up from it in the following proportions:—3½ parts resin, 1 part cellosolve, 2 parts butyl acetate, and 2 parts ethyl acetate, and is consequently a six-pound cut. The vinyl type resin was vinyl acetate and had the following characteristics:—Acid value, 0; softening point, 127 degrees C. The varnish was made up of 1 part resin, 1½ parts butyl acetate and 1 part ethyl acetate and had an acid value of 0.13. Spirit manilla varnish used was one which is at present on the market and contains a little congo dust and has an acid value of 54. The commercial brands of glyptal type and phenolic type of resin were cut in toluol and their compositions are unknown.

Oils and oil varnishes appear to have a definite advantage over the other treatments. The long and short oil varnishes do not come up to the bodied oils, nor are they as good as some of the other treatments. The oils and varnishes were prepared as per instructions, and their good and bad points will be discussed later on in comparison with the other treatments.

In the making of the panels to duplicate faults found in plaster surfaces, it was found that the soft panels, being slow setting, were easily mixed, but required careful handling on account of their softness. The hard panels were rather difficult to prepare on account of the quick set and had to be troweled immediately the mixture was placed in the moulds. The efflorescent and frozen panels presented no difficulties and were more like the standard mix used. The frozen panels were exposed to frost for a period of twenty-one hours with a maximum temperature of 32 degrees F. and a minimum of 16 degrees F. during the exposure. The panels were then allowed to dry out at 70 degrees F., but required a much longer time than those which had not been frozen. In making the free lime panels the mix behaved perfectly until the addition of the free lime which commenced to hydrate immediately, forming blisters on the surface. When dry, the faces of the panels were rough and scaled at these spots where the unslaked lime had been incorporated.

The results of the exposure tests on the panels treated by the afore-mentioned methods are tabulated in Tables 2, 3 and 4 (below). The panels which were made to a standard formula for finishing plaster and exposed under normal atmospheric conditions for approximately three months showed no signs of deterioration for any of the treatments applied, and it was only when we came to the so-called faulty panels that failures began to appear under normal conditions. The semi-submerged panels, however, began to show signs of change after twenty-four hours immersion in water. Most of these changes were various types of blistering, varying in size from several very minute blisters here and there over the surface to one or two large blisters of about an inch in diameter. On breaking some of the blisters, they were found to contain water, and a large number of them receded as time went on. These results tend to point to the fact that hard, watertight sealers are not satisfactory, neither are those which contain constituents which hydrolyze easily or have any affinity for water.

Taking the results in groups as the whole work has been carried out, we find that the chemical treatments, with the exception of aluminum sulphate and magnesium fluosilicate, do not come up to the control panels which had no other treatment than two coats of paint. After-treating these panels with limed rosin did not improve them very much, but the phenolic resin used as an after-treatment gave satisfactory results over aluminum sulphate. Here, however, we are combining two treatments which in themselves give good results, and are not achieving much.

Glue solutions have not proved satisfactory; in fact, they are about the worst of the whole lot tried and are far inferior to no treatment at all prior to painting. In all cases bad blistering was noticed within twenty-four hours immersion. Glue, being a reversible colloid, will swell on coming in contact with water and on drying will again gelatinize. This change will go on indefinitely, thus rendering glue solutions unsatisfactory for priming plaster surfaces, as there is always a certain amount of water present in plaster, which changes with changing atmospheric conditions unless rendered impervious to such conditions. Whether this peculiarity can be overcome by previously hydrolyzing the glue or making the addition of certain chemicals to the solutions, we have not ascertained, although claims are made for such products being satisfactory under conditions prevalent in plaster surfaces.

Cold cut solutions of gums offer possibilities. It will be noted from the tables that the synthetic resins are more satisfactory than the natural, with the exception of the vinylite type, which did not come up to shellac or limed rosin. There was a very slight semblance of fine blistering after ninety hours on good plaster panels in the case of the phenolic and phthalic glycerin types, but this afterwards disappeared without any recurrence. The phenolic resin gave better results when used as an after-treatment for aluminum sulphate and magnesium fluosilicate than any of the resins tried, but the results obtained were only equivalent to those obtained by the chemical treatments alone. Therefore, there is no advantage to be obtained in treating plaster first with chemical solutions and then sealing with a solution of resin prior to applying flat wall paint. The use of a phenolic resin in a cold cut solution tends to improve the conditions obtained by chemical treatment over faulty panels, but does not surpass other treatments which will be dealt with later.

Bodied Oils and Varnishes

Turning now to the bodied oils and varnishes, we find that these give by far the best results. The varnishes do not come up to the straight bodied oils, due no doubt to the presence of limed rosin which would tend to hydrolize to a certain extent, causing the failure of the varnish as a sealer for plaster prior to painting. The bodied oils, however, have shown no signs of deterioration after several weeks' immersion. Acid value seems to have little or no effect on the value of the oil for neutralizing the alkalinity of the plaster, low and high acid value oils giving the same results. From the table you will notice that in the case of the oil having an acid value of 12.5 controlled by the addition of rosin, there was slight blistering after 1,080 hours, but the oil with acid value 15 showed no signs of blister-

ing, while those oils whose acid value was controlled by the addition of free fatty acids remained satisfactory after 1,224 hours' immersion. Based on these results, it is safe to say that the free lime existent in the plaster is not responsible for the so-called failure of paint by lime burn, or saponification of the vehicle, for if such were the case then a bodied oil of acid value 15 would react with the lime in the presence of the water present in a very short time. Blown linseed oils show somewhat similar results to the kettle bodied oils, except that the high acid value oil blisters more easily than the low.

Bodied china wood oil compares favorably with bodied linseed oil over good plaster panels, but tends to show signs of blistering over soft and frozen panels, due, no doubt, to the hardness of the film. Varnishes made from china wood oil and phenolic resin, and linseed oil and phenolic resin, show signs of fine blistering in the immersion test. These results agree more with the long and short oil varnishes made with limed rosin than with either the straight bodied oils or the cold cut solutions of the resins.

Lacquers do not appear to have anything in their favor for the priming of plaster; both the nitrocellulose and the

Table 2—Water Immersion Test on Good Plaster

Treatment.	Panel No.	24 hrs.	90 hrs.	168 hrs.	258 hrs.	336 hrs.	504 hrs.	672 hrs.	840 hrs.	1080 hurs.	Remarks.
Acetic acid	II.1	E.	E.	E	E.	E.	Test discontinued				Film left panel due to efflorescence
Sulphuric acid	II.2	O.K.	B.2.L.	B.R.	F.	F.	Test discontinued				
Aluminum sulphate	II.3	O.K.	B.1.F.	B.R.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Zinc sulphate	II.4	O.K.	B.1.F.	B.2.F.	B.2.L.	B.2.L.	Test discontinued				
Calcium sulphate	II.5	O.K.	F.	F.	F.	F.	Test discontinued				
Magnesium fluosilicate	II.6	O.K.	B.3.F.	B.R.	B.R.	B.R.	Test discontinued				
Animal glue	III.1	B.3.L.	B.3.L.	B.3.L.	B.3.L.	Test discontinued					
Fish glue	III.2	B.2.L.	B.2.L.	B.2.L.	B.2.L.	Test discontinued					
Casein glue	III.3	B.2.F.	B.2.L.	B.2.L.	B.2.L.	Test discontinued					
Shellac	IV.1	F.&B2	F.&B2	F.&B2	F.&B2	F.&B2	P.	Test discontinued			
Limed rosin	IV.2	O.K.	B.1.F.	B.R.	O.K.	O.K.	B.2.F.	Test discontinued			
Phthalic glycerin (lab.)	IV.3	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O K.	O.K.	F.&B.1.F.	
Phenol-formaldehyde (lab.)	IV.4	B.3.	F.&BR	B.1	B.1	B.1	Test discontinued				
Vinylite	IV.5	B.3.	B.3.	B.3.	B.3.	B.2.	Test discontinued				
Spirit Manila	IV.6	B.1.L.	B.2.L.	B.2.L.	B.2.L.	B.2.L.	Test discontinued				
Phthalic glycerin (comm.)	IV.7	O.K.	B.1.F.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Phenol-formaldehyde (comm.)	IV.8	O.K.	B.1.F.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	L.1.E.	
Acetic acid after treated limed rosin	II.1.IV.2	E.	E.	E.	E.	Test discontinued					
Sulphuric acid after treated limed rosin	II.2.IV.2	B.1.L.	O.K.	O.K.	L.1.	L.1.	Test discontinued				
Alum. sulph. after treated limed rosin	II.3.IV.2	B.1.F.	B.1.F.	B.2.F.	B.2.F.	B.2.F.	Test discontinued				
Zinc sulphate after treated limed rosin	II.4.IV.2	B.2.L.	B.2.L.	B.3.L.	B.3.L.	B.3.L.	Test discontinued				
Calcium sulphate after treated limed rosin	II.5.IV.2	B.1.F.	B.1.F.	B.R.	O.K.	O.K.	Test discontinued				
Magnesium fluosilicate after treated limed rosin.	II.6.IV.2	B.1.F.	B.1.F.	L.1.	L.1.	L.1.	Test discontinued				
Aluminium sulphate-phthalic	II.3.IV.7	B.3.	B.3.	B.3.	B.3.	Test discontinued					
Magnesium fluosilicate-phthalic	IV.6.IV.7	B.1.	B.3.	B.3.	B.3.	Test discontinued					
Aluminum sulphate-phenol-resin	II.3.IV.8	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Magnesium fluosilicate-phenol-resin	II.6.IV.8	O.K.	B.1.F.	B.1.F.	B.1.F.	B.1.F.	B.1.F.	B.1.F.	B.1.F.	B.1.F.	
Kettle bodied linseed oil	V.1	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Kettle bodied Chinawood oil	V.2	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Long oil varnish	V.3	B.1.F.	B.1.F.	B.1.L.	B.1.L.	Test discontinued					
Short oil varnish	V.4	O.K.	B.1.F.	B.1.F.	B.1.F.	Test discontinued					
Kettle bodied linseed A.V.6	V.5	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	A.V. controlled with rosin
Kettle bodied linseed A.V.7.5	V.6	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	" "
Kettle bodied linseed A.V.9.96	V.7	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	" "
Kettle bodied linseed A.V.12.5	V.8	O.K.	O.K.	O.K.	O.K.	O.K.	F.	O.K.	O.K.	B.1.F.&.F.	" "
Kettle bodied linseed A.V.15	V.9	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	" "
Blown linseed oil A.V.3	V.10	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Blown linseed oil A.V.10	V.11	O.K.	O.K.	O.K.	O.K.	O.K.	B.1.F.	B.1.L.	B.R.	B.2.F.	
Kettle bodied linseed A.V.6	IX.1	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	A.V. controlled with fatty acids
Kettle bodied linseed A.V.10	IX.2	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	" "
Kettle bodied linseed A.V.15	IX.3	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	" "
Linseed oil and syn. resin varnish	IX.48	O.K.	B.1.F.	B.1.F.	B.1.F.	B.1.F.	B.1.F.	Test discontinued			
Chinawood oil resin varnish	IX.49	O.K.	B.1.F.	B.1.F.	B.2.F.	B.2.F.	B.2.F.	Test discontinued			
Cellulose acetate lacquer	VI.1	O.K.	B.1.F.	B.1.L.	B.2.L.	B.2.L.	Test discontinued				Blisters cracked
Nitrocellulose lacquer	VI.2	O.K.	P.	P.	P.	P.	Test discontinued				
Control panel no. treatment	VII.1	B.1.F.	B.2.F.	B.3.F.	B.3.F.	B.3.F.	B.3.F.	B.3.F.	B.3.F.	B.3.F.	
Control panel no. treatment	VII.2	B.1.F.	B.2.F.	B.1.L.	B.1.L.	L.1.	L.1.&B.1.L.	L.1.&B.1.L.	L.1.&B.1.L.	L.1.&B.1.L.	
Control panel no. treatment	VII.3	B.1.F.	B.1.F.	B.1.L.	B.1.L.	Test discontinued					

Table 3—Water Immersion Test on Faulty Plaster

Treatment.	Panel No.	24 hrs.	90 hrs.	168 hrs.	258 hrs.	336 hrs.	504 hrs.	672 hrs.	840 hrs.	1080 hrs.	Remarks.
Soft—											
Alum. sulphate	8	B.1.&L.1.	B.1.&L.1.	B.1.&L.1	B.1.&L.1	Test discontinued					Film soft.
Mag. fluosilicate	9	B.3.&L.3.	B.3.&L.3.	B.3.&L.3	B.3.&L.3.	Test discontinued					
Alum. sulp. and phthalic resin	10	B.2	B.2	B.3	B.3	Test discontinued					
Mag. fluo. and phthalic resin	11	B.1	B.1	B.2	B.3	Test discontinued					
Alum, sulp and phenol resin	12	B.1.F.	B.1.F.	B.1.L.	B.1.L.	Test discontinued					
Mag. fluo. and phenol resin	13	L.1	L.1	L.1	B.1.&L.1.	B.1.&L.1	B.2.&L.2	B.2.&L.2	B.2.&L.2	B.2.&L.2	After 1224 hrs.
China wood oil bodied	14	B.3.F.	B.3.F.	B.3.F.	B.3.F.	Test discontinued					
Control—no treatment	..	B.1	B.1	B.1.L.	B.3	Test discontinued					
Hard—											
Alum. sulp. and C.W.O	15	B.2.F.	B.3.F.	B.3.F.	B.3.F.	B.3.F.	B.3.F.	B.3.F.	B.3.F.	B.3.F.&E.	After 1224 hrs.
Mag. fluo. and C.W.O.	16	B.1.L.	B.1.L.	B.1.L.	B.1.L.	B.1.L.	B.1.L.	B.R.	B.R.	B.R.	After 1224 hrs.
Alum, sulphate	17	B.3.&L.3.	B.3.&L.3.	B.3.&L.3	B.3.&L.3	Test discontinued					
Mag. fluosilicate	18	L.E.	L.E.	B.1.&LE	B.1.&.L.E	B.1.&LE	B.1.&LE	B.1.&LE	B.1.&LE	B.1&LE&F.	After 1224 hrs.
Alum, sulp. and phthalic resin	19	B.3.L.	B.3.L.	B.3.L.	B.3.L.	Test discontinued					
Mag. fluo. and phthalic resin	20	B.3	B.3	B.3	B.3	Test discontinued					
Alum. sulp and phenol resin	21	B.1.&L.2.	B.1.&L.2	B.1.&L.2	B.1.&L.2	B.1.&L.2	B.1.&L.2	B.1.&L.2	B.R.&L.2	B.R.&L.2	After 1224 hrs.
Mag. fluo. and phenol resin	22	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	After 1224 hrs.
China wood oil	23	Panel lost									
Control—no treatment	..	B.3	B.3	B.3	B.3	Test discontinued					
Efflorescent—											
Alum. sulphate	24	O.K.	O.K.	O.K.	O.K.	B.1.	B.1.	B.1.	B.R.	B.R.	
Mag. fluosilicate	25	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	B.1.F.	B.1.F.	
Alum. sulph. and phthalic	26	B.1.F.	B.1.F.	B.3.F.	B.3.L.	B.3.L.	B.3.L.	B.3.L.	B.3.L.	B.3.L.	
Mag. fluo. and phthalic	27	B.1.F.	B.2	B.2	B.2	B.2	B.2	B.3	B.3	B.3	
Alum. sulph. and phenol	28	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Mag. fluo. and phenol	29	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
China wood oil	30	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Control—no treatment	..	F.	F.	F.	F.&L.1	F.&L.1	L.1	F.&L.1	F.&L.1	F.&L.1	
Free Lime—											
Alum. sulphate	31	L.3	B.1.&.L.3.	Test discontinued							
Mag. fluosilicate	32	L.3	L.3	Test discontinued							
Alum. sulph and phthalic	33	O.K.	B.1.L.	B.1.L.	B.2.L.	B.3.L.	B.3.L.	B.3.L.	B.3.L.	B.3.L.	
Mag. fluo. and phthalic	34	B.1.F.	B.1	B.1.	B.2.	B.3.	B.3.	B.3.&C.	B.3.&C.	B.3.&C.	
Alum. sulph and phenol	35	B.3	B.3.&.L.1	B.3&L.1	B.3.&L.1	B.3.&L.1	B.3.&L.1	B.3.&L.1	B.3.&L.1	B.3.&L.1	
Mag. fluo. and phenol	36	L.S.	L.S.	L.S.	L.S.	L.S.	L.S.	L.S.	L.S.	L.S.	
Chino wood oil	37	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	C.K.	O.K.	O.K.	
Control—no treatment	..	C.K.	O.K.	O.K.	L.1	L.1	L.1	L.1	L.1	L.1	
Frozen—											
Alum. sulphate	38	F.	F.	F.&L.1	F.&L.1	F.&L.1	F.&L.2	F.&L.2	F.&L.3	F.&L.3	
Mag. fluosilicate	39	L.3	L.3	Test discontinued							
Alum. sulph. and phthalic	40	O.K	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Mag. fluo. and phthalic	41	O.K.	O.K.	O.K.	O.K.	L.1.	L.1.	L.1.	L.1.	L.1.	
Alum. sulph and phenol	42	O.K.	O.K.	O.K.	B.1.&L.1	B.1.&L.1	B.1.&L.1	B.1.&L.1.	B.1.&L.1.	B.1.&L.1	
Mag. fluo. and phenol	43	O.K.	O.K.	O.K.	O.K.	B.1	B.2.	B.2.	B.3.	B.3.	
China wood oil	44	O.K.	B.1.F.	B.1.F.	B.1.F.	B.1.F.	B.1.F.	B.1.F.	B.1 F.	B 1.F.	Film wrinkled
Control—no treatment	..	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Soda sulphate—											
Bodied china wood oil	51	B.3;E;S.	B.3;E;S.	B.3;E;S.	B.3;E;S.	B.3;E;S.	B.3;E;S.	Test discontinued			
Bodied linseed oil	62	B.1;E;S.	B.1;E;S.	P.1;E;S.	B.1;E;S.	B.1;E;S.	B.1;E;S.	Test discontinued			
Linseed oil and syn. resin varnish	53	B.1;E;S.	B.1;E;S.	B.1;E;S.	B.1;E;S.	P.1;E;S.	B.1;E;S.	Test discontinued			
China wood oil and syn. resin varnish	54	B.2;E;S.	B.2;E;S.	B.2;E;S.	B.2;E;S.	B.2;E;S.	B.2;E;S.	Test discontinued			

Table 4—Exposure Tests on Faulty Plaster

Treatment.	Panel No.	24 hrs.	90 hrs.	168 hrs.	258 hrs.	336 hrs.	504 hrs.	672 hrs.	840 hrs.	1080 hrs.	Remarks.
Soft—											
Alum. sulphate	8	F.	F.	F.	F.	F.	F.	F.	F.	F.	
Mag. fluosilicate	9	L.2	L.2	L.2	L.2	L.2	L.2	L.2	L.2	L.2	
Alum. sulp. and phthalic	10	O.K.	O.K.	P.	P.	P.	P.	P	P.	P.	Plaster adhering to film.
Mag. fluo. and phthalic	11	O.K.	C.	C.	C.	C.	L.E.&C	L.E.&C.	L.E.&C.	L.E.&C.	
Alum. sulp. and phenol	12	O.K.	O.K.	O.K.	O.K.	O.K.	L.E.	L.E.	L.E.	L.E.	
Mag. fluo. and phenol	13	O.K.	O.K.	O.K.	O.K.	B.1.F.	B.1.F.&LE	B.R.&L.E.	B.R.&L.E.	B.R.&L.E.	
Chinawood oil	14	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	B.1.F.&C.	B.1.&F.&C.	
Control—no treatment	..	Broken									
Hard—											
Alum. sulp. and C.W.O	15	O.K.	O.K.	F.	F.	F.	F.	F.	F.	F.	
Mag. sulp. and C.W.O	16	L.E.	L.E.	L.E.	L.E.	L.E.	L.E.	L.E.	L.E.	L.E.	
Alum. sulphate	17	L.3	L.3.	L.3.	L.3.	L.3.	L.3.	L.3.	L.3.	L.3.	
Mag. fluosilicate	18	L.1.	L.1.	L.1.	L.1.	L.1.	L.1.	L.1.	L.1.	L.1.	
Alum. sulph. and phthalic	19	O.K.	C.	C.	C.	C.	C.	C.	C.	C.	Wrinkling.
Mag. fluo. and phthalic	20	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Alum. sulp and phenol	21	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Mag. sulp and phenol	22	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	E.1.	E.1.	E.1.	
Chinawood oil	23	Panel lost									
Control—no treatment	..	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Efflorescent—											
Alum, sulphate	24	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Mag. fluosilicate	25	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Alum. sulp and phthalic	26	E.	E.	E.	E.	E.	E.	E	E.	E.	
Mag. fluo. and phthalic	27	Panel lost									
Alum. sulp. and phenol	28	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Mag. fluo. and phenol	29	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Chinawood oil	30	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Control—no treatment	..	F.	F.	F.	F.	F.	F.	F.	F.	R.	
Free lime—											
Alum. sulphate	31	L.S.	L.S.	L.S.	L.S.	L.S.	L.S.	L.S.&L.E.	L.S.&L.E.	L.S.&L.E.	
Mag. fluosilicate	32	L.3.	L.3.	L.3.	L.3.	L.3.	L.3.	L.3.	L.3.	L.3.	
Alum. sulp. and phthalic	33	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Mag. fluo. and ph'halic	34	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Alum. sulp and phenol	35	L.S.	L.S.	L.S.	L.S.	L.S.&E.	L.S.&E.	L.S.&E.	L.S.&E.	L.S.&E.	
Mag. fluo. and phenol	36	O.K.	L.S.	L.S.	L.S.	L.S.	L.S.	L.S.	L.S.	L.S.	
Chinawood oil	37	O.K.	L.S.	L.S.	L.S.	L.S.	L.S.	L.S.	L.S.	L.S.	Glossy spots.
Control—no treatment	..	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	E	E.	E	
Frozen—											
Alum. sulphate	38	F.	F.	F.	F.	F.&L.3.	F.&L.3	F.&L.3	F.&L.3	F.&.L.3	
Mag. fluosilicate	39	L.3.	L.3.	L.3.	L.3.	L.3.	L.3.	L.3.	L.3.	L.3.	
Alum. sulp. and phthalic	40	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Mag. fluo. and phthalic	41	O.K.	L.1.	L.1.	L.1.	L.1.	L.1.	L.1.&C.	L.1.&C.	L.1.&C.	Glossy spots appeared.
Alum. sulp and phenol	42	O.K.	L.1.	L.1.	L.1.	L.1.	L.1.	L.1.	L.1.	L.1	
Mag. fluo. and phenol	43	F.	F.&L.1.	L.1.	L.1.	L.1.	F.&L.1.	F.&L.1.	F.&L.1.	F.&.L.1.	
Chinawood oil	44	O.K.	O.K.	F.	F.	F.	F.	F.	F.	F.	
Control—no treatment	..	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	
Sod. sulphate—											
Bodied chinawood oil	51	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	Test discontinued			
Bodied linseed oil	52	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	Test discontinued			
Linseed oil and syn. resin varnish	53	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	Test discontinued			
Chinawood oil and syn. resin varnish	54	O.K.	O.K.	O.K.	O.K.	O.K.	O.K.	Test discontinued			

cellulose acetate lacquers blistered badly, cracked and peeled during 336 hours of immersion. The nitrocellulose lacquer lost adhesion around the edges, resulting in the film curling and peeling from the edges inward after about three days' immersion.

Now we come to the panels which contained 2 percent sodium sulphate and which were treated with bodied oil and varnishes containing these bodied oils and phenolic type of resin. From the results obtained with these panels we have conclusive proof that the alkalies present in the plaster components in the presence of moisture are the cause of the saponification of the vehicle which has up to now been attributed to the presence of free calcium hydroxide in the plaster. Comparing the panels exposed on the rack with those immersed in water, we find that the former have shown no after effects from the addition, while the latter have failed completely in every case. The color has bleached and the vehicle saponified, leaving the pigment in a powdery condition. The china wood oil and the varnish made from it are worse than the linseed oil. The straight linseed oil shows slight blistering, while the varnish made from it only had two large blisters. The same primers over the same plaster mix without the sodium sulphate only showed a few minute blisters.

Key to the Tables

The various results obtained can be better compared by referring to tables 2, 3 and 4; the key to the abbreviations used in the tables follow:—

B.1. Slight blistering.
B.2. Medium blistering.
B.3. Bad blistering.
B.1.F. Slight blistering where blisters are very small.
B.2.F. Medium blistering where blisters are very small.
B.3.F. Bad blistering where blisters are very small.
B.1.L. Slight blistering where blisters are large.
B.2.L. Medium blistering where blisters are large.
B.3.L. Bad blistering where blisters are large.
B.R. Blisters receding.
C. Cracking or splitting of paint film.
E. Efflorescence.
F. Bleaching or fading of color.
L.1. Slight lime burn.
L.2. Medium lime burn.
L.3. Bad lime burn.
L.E. Lime burn on edges only.
L.S. Lime burn on free lime spots only.
P. Sealer and paint film peeling.
S. Saponification of vehicle or sealer causing powdering of paint film.

By lime burn is meant a change of color of the final coat; the color, instead of remaining blue, changed to a purple. The cracking and splitting of the paint film was of a hairline nature, and the peeling in several cases was due to the breaking of the plaster, especially so in the case of the faulty panels.

It is quite evident from the work which we have carried out that the paint and primers are not, in the majority of cases, to blame. It is true that certain of the primers tried during this work have failed completely, but we expected this and only included them in an endeavor to make the work as complete as possible. We have proved that common faults met with in plaster surfaces can be satisfactorily primed or sealed and afterward painted with a definite degree of certainty that the paint will stay put and give pleasing effects. We have also found that under certain conditions nothing, not even competitive finishes, such as wallpaper, will remain on the plaster. In this latter case, remove the cause and the troubles will cease. Having reached such conclusions, we believe that our work has not been in vain, and that we have achieved the goal which we set ourselves.

From the data collected around the plastering trade it is quite evident that master plasterers are willing to accept the blame for paint failures, but where are they when the paint failures are found? Their contract being finished, they have left the property, leaving a host of troubles for the unsuspecting painter who follows. He, in turn, being unable to obtain satisfaction, blames the manufacturer of the paint, who then has to devise methods of overcoming troubles for which he is not responsible and bear the cost, in the majority of cases, of remedying the careless, slipshod work of other trades. What, then, you may ask, is the cure? Simply this:—The paint manufacturers today are fairly well united throughout the country in the Federation of Paint and Varnish Production Clubs and in the American Paint and Varnish Manufacturers' Association for the furtherance of work of a non-competitive nature. Why not allow these two bodies to canvass the architects' societies with a view of incorporating in their specifications for buildings data relating to the mixing and preparaton of plaster surfaces so that the responsibility of improperly applied plaster, which is unsuitable for satisfactory painting, shall rest with the plasterer? We believe that if this be done, the plasterers would be more careful in the choice of their materials and take greater pains with their work. The painting of plaster surfaces has not been given enough attention in the past by architects. They should include in their specifications limits for alkali content of the finished plaster surfaces, so that the alkali content is so low as to be unharmful to paint which may afterward be applied.

Importance of Ventilation

Too much attention cannot be paid to the ventilation of plaster surfaces during drying. Water is the starting point of many of the troubles which confront us, and if the surface is sealed to prevent the evaporation of the water used in mixing through it, ample ventilation should be provided in the rear of the plaster for the evaporation and diffusion of the water vapor to reduce the water pressure immediately behind the paint film. If such ventilation is omitted, blistering will ensue in every case, and where there is a large amount of water soluble salts present in the plaster these will have a further devastating effect on the paint. These observations can readily be verified by making a comparison of those panels which were submitted to the immersion test with those which were exposed on the rack. The only faults found in the exposure tests have been discoloration caused by the action of lime.

Canvassing the architects will take time, and in the meantime many complaints of paint failure over plaster will have to be remedied, and for this we suggest a sealer built up along the lines of the linseed oil-synthetic resin type of varnish or straight bodied linseed oil, these two giving the best results under all circumstances. In this work we have dealt only with the clear sealers—that is, unpigmented. We believe, however, that pigmented sealers made using non-reactive pigments with such vehicles as outlined above will give satisfactory results, and in this way a satisfactory two-coat job would be obtainable in all cases, except where alkalies other than calcium and magnesium hydroxides be present in large quantities. Where this condition exists we recommend a wash coat of plaster of paris prior to the sealer.

During the time at our disposal it has been impossible to carry out all the work we had planned on doing, but the work which we have done leads us to a definite end in that we are able to lay the saponification of paint vehicles to the alkali content of plaster and not to free lime, as previously thought; we have also shown that the water used in mixing must have a proper outlet or it will cause a vast amount of trouble which would be otherwise avoided.

N. B.:—The imperial gallon was used throughout in this work.

The following is the formula of the No. 1 benzine denatured alcohol:—
Ethyl alcohol, 90 parts by volume.
Methyl alcohol, 9 parts by volume.
Benzine, 1 part by volume.

Saturday, November 12

Third Session, Saturday Forenoon

The third session was held Saturday forenoon and was devoted to the presentation and discussion of additional papers from constituent clubs. V. C. Bidlack presided.

Paper by Atwood

F. C. Atwood, of the Craftex Company, presented the following special paper:—

Relation Between Radiant Energy and Paint

Paint is normally considered as a medium for the decoration and/or protection of surfaces. In many cases its utility is purely one of decoration. This is a psychical or esthetic function. Again we find it used to form a tight coat or protective jacket over wood and metal. This is a combined physical and chemical function and the results can be judged by observation. Again the eye is sufficient criterion to judge the value of the paint. Within recent years, we have begun to consider more and more a purely physical property of paint which cannot be judged by the eye. I refer to the reflection, radiation and absorption by paint of radiant energy.

Radiation in a broad sense may be considered as propagation of energy in any form through space. It is still controversial whether this propagation is by means of waves or by the emission or quantum theory. At least every radiation may be decomposed into a certain number of periodic disturbances and each of these disturbances is an element of the radiation. We are in the habit, for purposes of convenience, of speaking of these disturbances as vibrations and describing them either by the number of such disturbances per second or by the distance between similar phases of each disturbance and calling it the wave length of the radiation.

The sun is the largest source of radiant energy we have. It is estimated that we receive one horse power of energy each square yard of the earth's surface. This energy evaporates a large amount of water. It tends to heat and dry out many other bodies so we protect them with paint to ward off or reflect this energy. On the other hand, innumerable attempts have been made to collect this energy and harness it to our use. Both German engineers and American engineers appear to be doing this with some degree of success at the present time by absorbing this energy and transforming it to electrical energy. They even believe it can be done for a capital investment less that $200 per horse power which brings it into the range of present day prime movers.

These radiations with which we are concerned all travel at the rate of approximately 186,000 miles per second. They travel through space or vacuum unretarded. Since the speed of propagation is constant, it follows that the product of the wave length and the frequency is constant and equal to the velocity. This relationship is true whether we are in the region of X-rays, ultra-violet, the visible spectrum, the infra-red, or low temperature heat range or down to the so-called "Hertzian" or radio waves. We all are familiar with the fact that the radio industry started out by distinguishing broadcast stations by their wave length and we still speak of short wave stations. It is more convenient now to speak of radio waves by their period in kilocycles. The period of vibration is so great in our radiant energy region, however, that the wave length best identifies the particular part of the field we wish to describe.

This discussion is concerned with the fact that in all our paint and color work we have been in the habit of dealing with the visible spectrum. We describe a paint as white or black, red or green, or by some other color. The New York Production Club has shown us how these colors may be broken down and analyzed by the wave length of the light which they reflect or emit. They showed that the truest colors transmit or reflect light over a very short range of wave lengths in the visible spectrum. On the other hand, light or other radiant energy of other wave lengths is absorbed and transformed into heat and dissipated by non visible radiation.

Radiant energy travels in straight lines, is reflected, and its direction changed by mirrors, lenses or prisms. Light, as we think of it, is but a small part of the spectrum of radiant energy. Light is visible to us through our eyes only as the energy radiated from some source comes directly or by reflection into our eyes. If that light strikes some other part of our body and is in part absorbed, we feel a sensation of heat. The light has been transformed into heat.

Efficiency of Light Sources

We speak of our various light sources as being inefficient. The energy given off as light is only from 2 to 10 percent of the total energy emitted from an incandescent source, the remainder is invisible energy principally in the infra red region. Visible radiation has a band of wave lengths ranging from 0.4 micron to 0.76 micron. Radiation shorter than 0.4 micron is in the ultra violet region while radiation longer than 0.76 is in the infra red region. Heat radiation is actually transmitted by wave lengths ranging in a wide band from 0.02 micron to 350 microns. If we are going to talk about paint for radiators, for motors, for gas tanks, for heat insulation or for any similar purpose, we must concern ourselves with the behavior of the long infra red wave length radiation when it strikes our paint. We can neglect the short wave length radiation because very little heat is radiated in that region.

It has commonly been assumed that radiation originates or is set up by the vibration or agitation of the ultimate particles of matter. Theories vary as to this exact origin but the fact is that as the temperature of matter increases these vibrations increase in frequency and the energy due to the vibration also increases. There will be a wide range of frequencies but there will be no increase of low frequencies and a vast increase in the higher frequencies as the temperature increases. We can feel the radiation from any hot body long before there is visible evidence of heat. As heating increases, we first see a dull red, then yellow, and finally white heat.

It is thus evident that all ordinary heating of homes and buildings is concerned with the invisible, long infra-red rays so far as radiant energy is concerned. It would also appear that until we get to extremely high temperatures, the energy of the visible spectrum will be a small part of the total. On the other hand, a large percentage of the energy from the sun may well be in the visible spectrum because of the high temperature of its source. As an added factor, the earth's atmosphere tends to absorb both the very short and the very long wave length radiation and so restrict the solar radiation in large measure in the region of the visible spectrum.

Such considerations as the above led to the deduction of a law of radiation which helps give a picture to this study. This is known as the "Wien displacement law" and is simply a mathematical statement of the fact that as the temperature of the radiation source is changed the wave length having maximum energy in the spectrum will be changed in such a way that the product of this wave length and the corresponding absolute temperature of the source, T, is equal to a constant. When the wave length is expressed in microns and T in absolute degrees, this constant is slightly less than 3,000. From this we see that for sunlight, assuming the sun's temperature is 6000°C, the wave length for maximum energy is slightly less than 0.5 micron. Even for our hottest temperature on earth, the carbon arc, the maximum energy is for wave lengths close to 1 micron, and for room temperatures this maximum energy would be for wave lengths of 7 to 10 microns. At these lower temperatures, however, the energy distribution is over a wide range of wave lengths, and the maximum point on the energy distribution curve is scarcely perceptible.

There are two other laws of radiation which are helpful to this discussion. If we consider an opaque object and let radiation fall upon it, the relations between the portion reflected (R) and the portion absorbed (A) is $R+A=1$. The absorbing power of a surface is equal to the ratio of the radiation absorbed by the surface to the amount incident upon it. It is a function of the wave length and temperature only and depends on the nature of the surface. For a radiating body the emissive power E is a similar function of the wave length and temperature.

Emission is the term given to radiation leaving a surface. A body with a high emission factor will radiate more energy per unit area than a body with a low emission factor, both bodies being at the same temperature. The emissivity of a surface is the total energy radiated from the surface and may be expressed in ergs per sq. cm. per second.

"Black Body" Defined

One other definition is necessary here. A "black body" in this discussion of radiation does not refer to color, but means any substance which absorbs all the radiation incident upon it for all values of wave length and temperature. Such a substance does not exist where $A=1$, and $R=0$, but many approach this ideal condition.

A substance surrounded by walls all at the same temperature and similar surface conditions, is indistinguishable from its surroundings and may be considered a black body. The emissive power (e) of a black body is fundamental to radiation theory, and Kirchhoff's law as applied to monochromatic radiation may be stated:—

$$E = Ae \text{ or } \frac{E}{A} = e.$$

The ratio of emission to absorption is for all substances the same function of wave lengths and temperature and is a constant (e) equal to the emission of a "black body" at that temperature. Since the absorption A can never be greater than unity, it follows that black body radiation is greater than that of any other body at the same temperature. It further follows that every body absorbs the same rays it emits at a given temperature. It may absorb others, but will only emit those that a black body emits at that temperature.

It is a corollary, therefore, that if our paint film absorbs either light or heat radiation at room temperature, it can emit radiation only that a black body will emit at that temperature. How fast or how much it will emit is determined by the temperature differences between it and its surroundings.

The total radiation from a black body was first expressed mathematically by Stefan. Boltzman deduced a similar expression from Thermodynamic reasoning. This relation has had sufficient verification, so that it is now known as Stefan's Law. The total radiation from a black body is proportional to the fourth power of the absolute temperatures:— $e=S(T^4_2-T^4_1)$ may be thus T^4_2. When a high temperature source (T) is involved the expression is quite simply and accurately as expressed as $e=ST^4$. Where the temperature difference is small this expression simplifies to:—$e=4ST^3_2(T_2-T_1)=C(T_2-T_1)$, which is Newton's Law of Cooling. This cooling includes both radiation and convection losses and holds true when T_2-T_1 is not greater than 10°C.

The above constants are for black body radiation. When, as is usually the case, our surfaces are not true black bodies the equations may be corrected by combining the constant with the absorbing power as $E=eAST^4$. Available data for the absorbing or reflecting power are very meager, except in the visible spectrum. Most values must be determined experimentally and some data obtained for this discussion will be given. In general, it may be assumed that the majority of compounds, whether red, white, or blue, to the eye, are approximately 90 percent "black body." Metals may be but 2 percent to 5 percent black body. The least film of any kind on this metal, whether oxide, grease or varnish, tends to raise this value rapidly, so that its reflectivity for radiant energy is destroyed and its absorbing power raised to 50 percent, or even 90 percent that of a black body.

It might well be asked why all the above discussion is necessary and to what it leads. A few statements or facts current in our industry as well as certain apparently contradictory facts show the need for careful study and application of the laws of radiation. Paint is used in buildings to protect and decorate radiators. What paint should be used for most effective radiation. Motors and many electrical units must dissipate the losses due to resistances in the windings or magnetic fields. How should they be painted? Is it possible to paint either the exterior or interior walls of our buildings in a way which will prevent radiation of heat from within or absorption of heat from without. This latter problem is of great importance in tanks holding volatile materials. Is the same treatment applicable to storage tanks for holding heated liquids. These examples can be multiplied many times.

Radiation in Paint Selection

The best paint to use on any job where radiation must be considered can only be determined by knowing the temperature of the radiating source, and whether heat is to be held or radiated. It was shown that except for radiation from the sun, all useful heat radiation except light is in the infra-red region. This immediately gives us two classes to deal with:—Radiation from sunlight and all others. So long as sunlight alone is considered, then the best pigment to use for absorption of heat is black and the best protection from heat is obtained by pigments with the highest white light reflecting properties.

Let us take a gasoline tank as a concrete example. Assume that the same vehicle is used in all paints so that no protection problems are involved. We wish to prevent absorption of heat by the liquid and a consequent evaporation and loss of this liquid. A study of existing tables in the literature or as compiled in the International Critical Tables, shows that for wave lengths of light at or just below the wave length of maximum energy on up to a wave length of about 5 microns, which is the limit of the solar spectrum, our best reflector would be polished silver. This is expensive and the silver would rapidly tarnish and lose its virtue. Gold plate would be good except for an absorption leak between 0.4 and 0.5 microns and except for expense. Polished magnesium and aluminum are fair only because they absorb quite a bit of the wave lengths of maximum solar energy. They are, however, very good in the infra-red region, but arrive at high reflection values too late to be of use in the solar spectrum.

Our best white paint pigments nearly all have 90 percent or better reflection throughout the visible spectrum. The only figures I can find indicate these pigments very rapidly become black body absorbers beyond wave lengths of 2 to 3 microns. So long as most of the sun's energy reaches us in shorter wave lengths than these and so long as we take care that our vehicles are white, stay white, and are non-absorbers of energy, then white paints should be the most effective insulators against heat from the sun of any materials now available. Aluminum paint with its low solar reflection value is much inferior for this particular purpose.

On the other hand, if we want to prevent this same tank from chilling rapidly after the sun goes down, causing it to act as a boiler, then our white paints are almost useless and are scarcely better than black paints. They are black body radiators at the low temperature of the tank which is now the radiating source. In this case, a polished aluminum or tin

tank would be almost ideal with but a few percent absorption. Aluminum paint may be more practical, but here another factor enters into the problem. Films of any kind such as may be used for a vehicle are good absorbers of infra-red radiation. The vehicle therefore cuts down the value of the aluminum powder as an insulator by approximately 50 percent.

Suppose now our tank becomes a hot-water storage tank in our kitchen or basement. Obviously it should be left as a highly polished metal surface. Aluminum is the best, polished nickel and copper next, and galvanized sheet rather poor. To paint such a tank is to put money into the pockets of the gas company and take it out of our own. Even thin asbestos or magnesia insulator is not as good an insulator as the polished metal.

Paints for Heating Systems

If, however, our tank becomes the radiator of our heating system, conditions are reversed. We want the heat to come out the easiest possible way and with the least resistance. Again our white paint or pigmented paint of almost any color is the best to use because we want black body radiation and color has very little effect on black body conditions. Unfortunately we have for years used the worst possible paint for our radiators. Metallic paints with their high reflection coefficients for infra-red radiation are insulators and offer some considerable resistance to the radiation of our boiler heat. We may do well to put this metallic paint on our boiler itself and the exposed piping, but not on the radiators, for this increases the load on the boiler and higher temperatures are necessary to do the required work.

Radiation presupposes free space through which energy may be propogated from a radiating surface. We must remember this, for it shows the need of a fluid, poor conducting medium of some sort in contact with our radiating surface. To paint a polished metal surface spoils its heat reflecting qualities and makes of it a good radiator, since this property resides only in the surface. A vacuum bottle is a good container to hold hot liquids partly because of the poor conduction of the vacuum, but also in large part due to the mirrorlike silvered walls of this vacuum chamber. Aluminum foil in close contact with other sheets of foil makes a solid mass of aluminum which is one of our best heat conductors. Separate these sheets of foil by a fraction of an inch of air and they become one of the best heat insulators yet discovered.

A study of our house reveals further problems which today are not considered or are wrongly handled from the point of view of radiation. Thermal insulation is concerned with the problem of reducing the transfer of heat from one region to another. We are particularly concerned with the transfer of heat through the walls and partitions of buildings. It is well known that heat is transferred or lost by three general methods, namely, conduction, convection and radiation. All three methods play an important part in the loss of heat through building walls in the winter, or conversely, the intake of heat with the consequence of discomfort in the interior of buildings in the summer. In any case, the flow of heat invariably takes place from regions of higher temperature to regions of lower temperature. The above principles are so well known as to be common-place. Unfortunately, therefore, attention has been focused on methods for stopping losses by conduction and to some small extent by convection, while loss by radiation has been almost completely ignored. It is a fact, however, that possibly one-half the heat transferred takes place by radiation.

A very considerable amount of data is available on the insulation value of various materials, including materials of construction. In nearly every case the data relating to the transfer of heat is given in factors or coefficents of conductance and more specifically this thermal conduction factor is given as the so-called commercial conductivity of B.t.u. per hour, per square foot, per inch thick, per degree Fahrenheit. These coefficients have usually been measured by the so-called hot-plate guarded ring method and give the actual thermal conduction of the material itself rather than the air to air transmittance coefficient. The transmittance coefficient would include not only the conductivity of the material, but the emission and absorption coefficient at either face of the material, since most insulating materials to date probably had very similar emission coefficients on their surfaces, it has been reasonably correct to compare their value as insulators by comparing their conductivity coefficients.

Checking Emissions

If we consider the importance of the surface effect of our walls, we see that the emission or absorption coefficients of these surfaces approximate the so-called "black body" conditions and radiate the major portion of the heat which is conducted through the surfaces of the walls. It appears, therefore, that a very major improvement may be produced solely by treating our wall surfaces in such a way as to materially lower the emission coefficients. In the Bureau of Standards' circular 376, dated 1929, the statement is made that:—"Radiation is largely responsible for the ineffectiveness of air spaces bounded by ordinary building materials, such as are found in frame or other hollow walls. The low insulating value is often erroneously attributed to convection; but, as a matter of fact, from 50 to 80 percent of the heat transfer across air spaces of ordinary sizes takes place by radiation. If the air spaces were bounded by bright metallic surfaces, the transfer of heat by radiation would be greatly diminished, since clean metallic surfaces are much poorer radiators than non-metallic surfaces such as brick, stone, glass, wood, plaster, paper, etc."

It is a fact, as stated above, that whereas most surfaces emit 90 to 95 percent of the heat energy reaching them at normal room temperatures, bright polished surfaces like polished nickel, silver and aluminum emit only about 5 percent. It would appear very logical, therefore, to coat our building boards with sheets of polished metal if we can economically do so. The actual thickness necessary of the film forming the polished surface plays no part whatever since the property of the film we make use of resides in the surface only and the problem becomes one of determining the lowest practical cost of producing such a surface.

Our roof, as well as our walls, is nearly always dark-colored. If we could become accustomed to white or light-colored roofs our attics would be cooler in the summer. This would not effect heat loss in the Winter, however. If we want to save heat, then we should use aluminum foil or aluminum paint. Perhaps we would paint both the inside and the outside of our roof with aluminum paint or compromise by painting the exterior white and the interior with aluminum. White paint on the interior of our roof is of no value as an insulation material. The ideal condition would be to find a white pigment which retains its reflecting property for all infra-red rays as well as rays in the visible spectrum. In addition we should need a nonabsorptive vehicle because we have found it seriously diminishes the reflective power of aluminum.

Building boards are already being offered on the market with an aluminum foil coating. Refrigerator cars and truck bodies are being insulated with foil. Pipe coverings are now made of foil. Very substantial savings in weight are made in all these installations. If we had a paint which would reflect as well in the infra-red region as our white pigments do in the visible spectrum, we could have a huge new outlet for paint. None of our present common pigments answer this requirement.

Paint Films as Insulators

Tests were made to determine the value of paint films as thermal insulators. Cubical boxes were made up running 2 feet on a side. Heating coils were placed in the center of the box and were run at temperatures below visible heat. Thermometers were placed in the boxes and shielded from direct radiation. The boxes were run for twenty-four to forty-eight hour periods until readings were constant for several hours. Blanks were always run with any material under comparison. The power input and room temperatures were always carefully measured. The boxes were shielded from drafts, so that each box had uniform treatment. All data was brought to a uniform base and then compared to the best insulator as a standard.

All boxes were made of standard ⅜-inch gypsum wallboard. In all cases the corners were carefully made to avoid loss by convection currents from within the box. Three blanks were always run to give a direct comparison with the material under test. These boxes were made from dark gray gypsum wall board. In some cases a paint vehicle was used, but in most cases the pigment was painted on with water to avoid vehicle absorption. For comparison purposes two insulating boards were tested, Rockwall all wood insulation (½-inch) and Celotex (½-inch).

The temperature difference between the inside of the box and room temperature is the principal measurement of interest. This has to be corrected for the slight variation in power input and brought to a common unit (IC) based on the degrees temperature difference per unit of power input. These values may again be reduced to a comparison value using the best insulator as a standard (ID) in table 1.

It may be seen in table 1 that the relative insulating value is essentially the transmittance coefficient of these materials. This includes the actual conductance of the material itself plus the emission coefficient of the surface. It is quite apparent from this table that the emission coefficient is not altered except by the metallic coatings. The vehicle in the aluminum paint cuts down its insulating value as compared to metallic aluminum foil. The color or even the nature of the pigments studied has no appreciable effect on their black body absorption factor. The insulating boards are included only to show that a poor insulator coated with a good conductor of heat may become a good insulator comparable to these insulating boards if the coating material has a very low radiation absorption factor.

Another series of experiments, simple in themselves, but yielding data which give results in conformity with our theory and in line with previous discussion is shown in table 2. Here a number of thermometers of equal size were placed with their bulbs in direct sunlight. One thermometer was kept in a shaded spot within a few inches of the other bulbs so that the temperature could be measured under similar conditions of air circulation and all other factors except that no direct radiation fell on it. Here we find the mercury bulb reflecting very much as polished aluminum. Black paint and black paper cause the bulb to heat up.

Table 1

	Temp. diff. Deg. F. A	Power, watts. B	Relative ins. value. C and D	
Rockwall insulating board	127	683	332	100
Celotex	102	402	254	77
Al. foil-coated gypsum board	94	400	235	71
Al. paint-coated gypsum board	72	392	184	55
Graphite-coated gypsum board	58	395	147	44
Rockwall (yellow), gypsum board	58	416	139	42
Rockwall gray gypsum board	56	392	143	43
Mica coated gypboard	56	391	143	43
TiO_2 paint gypsum board	54	392	138	42
TiO_2 water gypsum board	52	346	150	45
ZnO water gypsum board	51	346	148	45
Lithopone water gypsum board	48	346	139	42
White lead water gypsum board	50	346	145	44

Table 2

Thermometer readings in sunlight with various radiating materials on bulbs

Al. foil	...	...	...	...	...	...	...	...	95	94
Al. foil and asphalt paper	96	102	110	90	101	100	101	100	...	...
Carbon paper	107	119	126	107	120	118	123	...	...	...
Black paint	...	...	...	...	...	...	...	...	106	109
Black paint	107	118	123	108	126	122	128	119	106	108
White outside paint	...	...	...	...	...	...	...	...	93	94
White casein paint	81	89	101	83	103	103	107	103	91	94
Al. paint	...	...	...	...	...	...	...	108	97	101
Al. paint	...	...	...	...	...	...	...	...	97	100
Plaint mercury in sun	98	102	114	90	110	107	110	104	93	96
Plain mercury in shade	73	79	86	72	85	88	90	90	83	84

Table 3

Cooling of thermometers with various radiating surfaces on bulbs

Surface.	Start.	Minutes— One.	Two.	Three.	Five.
Plain Hg	110	95	94	93	92
White plaint.	103	99	97	95	93
Black paint.	126	108	102	97	94
Carbon paper	120	109	104	99	96
Al foil (asphalt) black	101	93	92	90	89
Room temp.	85	86	86	86	86

White paint protects the bulb so the temperature is not seriously greater than shade temperature. Aluminum foil on asphalt paper reads higher than plain aluminum foil because here we have a radiating surface on one side as compared with plain foil with reflecting low absorption surfaces on both sides. If we imagine oil tanks replacing our bulbs, the results will be similar and show the superiority of white paint over aluminum paint as a heat insulator from solar radiation.

If now these thermometers are brought suddenly into shade the cooling rate shown in table 3, while not very accurate, shows the rapid cooling of the higher temperature and highly emitting black surface. The white surfaces have a low-temperature difference, the white and black cool rapidly and equally, whereas the aluminum cools much more slowly. I was not able to read these well enough to record at the time although experiments now under way may show this better.

Table 4

Wavelengths of various radiations

	Microns.		
Cosmic rays	0.00000005		
Gamma rays	0.000001	-	0.000140
X-rays	0.000010	-	0.013000
Ultra-violet	0.0136	-	0.4000
Limit of solar spectrum in the ultra-violet, due to atmospheric absorption	0.292		
Visible spectrum	0.4000	-	0.8000
Violet, representative, 0.410, limits	0.4000	-	0.422
Blue, representative, 0.470, limits	0.422	-	0.492
Green, representative, 0.520, limits	0.492	-	0.535
Maximum visual intensity	0.535		
Yellow, representative, 0.580, limits	0.535	-	0.586
Orange, representative, 0.600, limits	0.586	-	0.647
Red, representative, 0.650, limits	0.647	-	0.800
Infra-red	0.800	-	420.000
Limit of solar spectrum	5.300		
Hertzian waves	220. microns	-	20.000 meters

Tabulated Data

Table 4 is the wave lengths of various radiations and clearly shows the comparison of wave lengths and limits of various kinds of radiant energy.

Table 5 gives the reflection of energy from various surfaces over a range of wave lengths.

These tables give data of interest to this study and are compiled from the literature on radiation.

It may be stated in conclusion that many confusing problems in painting which have to do with heat or radiation effects may be understood and solved by reference to the laws of radiation. Data for radiation wave lengths beyond the visible spectrum is meagre and offers no information except that polished metals are the only known "white bodies" in the infra-red region and that all our present pigments behave as black bodies in this region. If good "white body" pigments could be found there should be use for large quantities of paint for thermal insulating purposes.

Table 5

Monochromatic reflection factors (Albedo)

Wave length in microns	.385	0.50	0.60	0.70	0.80	0.90	1.00	4.0	8.8	24.0
Antimony	..	..	53	..	..	..	55	68	72	..
Copper	28	44	72	83	89	..	90	97	98	..
Gold	27	43	79	92	95	..	95	97	97	..
Aluminum	..	..	..	..	..	..	74	91	97	99
Magnesium	45	72	73	..	..	..	74	84	93	..
Nickel	50	61	65	69	70	..	72	91	96	..
Mercury	..	71	70	73	..	..	..	..	..	..
Silver	..	90	93	94	95	..	96	98	99	..
Steel	..	55	58	59	61	..	65	90	94	..
Graphite	..	22	24	..	25	..	27	48	59	..
Zinc	..	55	57	61	62	55	49	96	98	..
Tin	..	..	..	..	..	..	54	72	87	..
Magnalium	84	83	83	83	84	..	84	99	91	..
Al_2O_3	..	..	84	..	..	88	..	21	2	6
Mg O	..	..	86	..	..	..	..	22	3.6	6.2
Lampblack	..	..	3.2	..	..	3.4	..	3.2	3.8	4.4
Cu O	..	..	..	..	..	24	..	15	..	4.4
Pb O	..	..	52	..	..	..	..	51	26	9.5
Red Oxide (Fe_2O_3)	..	..	26	..	..	41	..	30	3.7	9.1
Zn O	..	..	82	..	..	86	..	8.5	3.2	5.1
Mg CO_3	..	..	86	..	..	89	..	16	2.5	9.1
Pb CO_3	..	..	90	..	..	94	..	..	13.2	..
Red Brick	..	..	30	..	..	..	..	..	12.5	..
Feldspar	..	..	..	..	..	87	..	38	10	9.7
Indiana limestone	..	..	43	..	..	..	..	20	5	..
Slate	..	..	7	..	..	..	..	13	20	..
White marble	..	..	43	..	..	..	..	20	5	..

1912 values for compounds; 1920 for metals.

New York Club

The New York Paint and Varnish Production Club was represented by three papers, the first of which was presented by Frank Stearns, as follows:—

Kauri Reduction vs. Durability of Newer Type Varnishes

The kauri reduction test was developed by L. V. Pulsifer and was first made public about fifteen years ago. At that time the test was suggested to the Bureau of Standards as one means of evaluating durability of the spar varnishes which were used on the government aeroplanes. The test as finally perfected has been adopted by the American Society for Testing Materials and reported in the proceedings of that society starting in 1923. Various investigations on varnishes have been conducted by individuals and government agencies, all of whom have found substantial agreement between the kauri reduction test and the durability of the varnishes. (Kauri reduction test—see Gardner's Laboratory Manual 1930, p. 548-549.)

As a result, many government, state and municipal specifications include the kauri reduction test, which apparently has given a satisfactory indication of the durability of the varnishes purchased on these specifications.

Varnish manufacturers produce varnishes to pass the above specifications, but in formulating varnishes, more attention is directed to physical characteristics, such as working properties, drying time, gloss, hardness, adhesion, etc. Subcommittee "C" (New York Paint and Varnish Production Club) has undertaken the investigation of varnishes made with the newer types of synthetic resins.

In selecting varnishes with widely varied formulation, three oil lengths, 25, 50 and 75 gallons per 100 pounds resin, were chosen and the resins were suggested as representing the general commercial types available on the open market. The resins were raw rosin, ester gum, amberol F-7, amberol 226 and bakelite XR-254. The investigation also included five solutions of different glyptal type resins, being exposed as such, without any modification with drying oils.

To expedite the preparation of the varnishes, the various resin manufacturers were asked to furnish samples of varnishes according to the folowing general requirements: "Shall be capable of application by brush; viscosity between F-G on the Gardner-Holdt viscosity tubes; nonvolatile 50-55 percent; pass the gas test as per Federal specifications for spar varnish; manufacture shall be by one of the accepted methods—no laboratory 'freaks'; shall be the highest quality at each oil length; resins used shall represent commercial production materials; complete formula and cooking procedure to be furnished by manufacturer."

As the investigation was not intended to be one of research covering varnish formulation or cooking procedure with the various resins, it was thought that the selection of twenty varnishes was sufficiently comprehensive without becoming unwieldy.

Procedure

Selected flat grain maple wood panels, 12 inches x 6 inches x ¾ inches, were given three brush coats of varnish, first coat lightly sanded, forty-eight hours between coats. The edges and back of the panels were protected by two coats of a high grade spar varnish. The edges and corners of the paneds were left practically square, a light sanding taking care of any small splinters at those points. All the wood panels were prepared by one operator.

Two sets of steel panels 12 inches x 6 inches were prepared by two exposure test operators over radically different types of primer. At the Institute of Paint and Varnish Research the panels were prepared as follows:—One coat of 40 percent zinc chromate—60 percent iron oxide primer was brushed on, baked ½ hour at 400° F.; sanded and two coats of varnish brushed on, forty-eight hours between coats. The steel panels exposed at Brooklyn were prepared as follows:—One coat of carbon black rapid drying enamel was brushed on, baked one hour at 250° F.; rubbed with pumice stone and water, two coats of varnish brushed on, forty-eight hours between coats. The edges of all the steel panels were given a protective coat of paint after the varnish had been applied.

The exposure tests were conducted at the following points:—

(1) Miami, Florida, by Sub-tropical Testing Station. Wood panels exposed at 45° south, immersed in sea water at high tide and exposed to sunlight at low tide. ("tide level.")

(2) Hialeah, Florida, by DuPont Testing Station. Wood panels exposed at 45° south to normal weather.

(3) Washington, D. C., by Institute of Paint and Varnish Research. Wood and steel panels exposed at 45° south to normal weather plus one hour cold water spray every day between 12:00-1:00 p. m.

(4) Brooklyn, N. Y., by Keystone Varnish Co. Wood and steel panels exposed at 45° south to normal weather.

(5) Madison, Wisconsin, by the Forest Products Laboratory. Wood panels exposed at 45° south to normal weather.

The physical data and kauri reduction values were determined by various members of the committee. The kauri reduction values are the average results obtained from three different operators, each varnish being checked for non-volatile content by the individual. The other data

was checked by two members and the average figures appear in the tables, along with the formula of each varnish.

Notes on Exposure Tests

While the choice of wood panels for varnish exposure tests may be criticized, due to the inconsistencies shown between different pieces of wood, yet varnished wood is still exposed to all climatic conditions. A very significant variable brought out in this investigation is the difference of opinion regarding the end-point of the wood panels. The use of metal panels alone and converting the results to wood by an unknown constant would be still more misleading. The interpretation of any failure involves such factors as appearance, integrity and suitability for refinishing. Since the end-points are arbitrary, the initial failure, its type and the changes thereafter were used as a guide in reporting durability.

On all exposures the 25-gallon varnishes, with the exception of 25-254, failed rapidly after initial checking, becoming very dull and rough. The 50 and 75 gallon varnishes retained gloss much better, except at Miami, where most of the 75-gallon varnishes failed by dulling and apparent disintegration of the film. The glyptal type varnishes were outstanding in their gloss-retention, even after the films had cracked or loosened from the wood. A pronounced swelling of the films of the glyptal type varnishes was noticed after long exposure to moisture. In most exposures this condition was reported as pin-hole blisters which smoothed out again on subsequent drying and the ends of the panels were the points of permanent blistering.

25-Gallon Rosin Varnish Formula

50 lbs.	Hercules I wood rosin
25 gals.	Raw china wood oil
2 lbs.	Hydrated lime, heat to 550° F (to 570° F off fire). Check with
50 lbs.	Hercules I wood rosin, add
6 lbs.	Sublimed litharge, allow to cook at 500° F for 1½ hours, cool and reduce with
20 gals.	Hercules P W turpentine
20 gals.	Varsol
4 lbs.	Cobalt linoleate paste drier

Physical Properties

Viscosity	F
Color	6
Gas test	O. K.
Setting time 8° F	1½ hours
Drying time 80° F	18 hours
Cold water test—18 hours	White—clears in 1 hour
Boiling water test—1 hour	White in 15 minutes —clears in ¾ hour
Non-volatile	54.4%
Kauri reduction cracks	25%
Kauri reduction passes	16%

50-Gallon Rosin Varnish Formula

100 lbs.	Hercules I wood rosin, run to 450° F and add
6 lbs.	Hydrated lime, run to 560° F and add slowly with constant stirring
37½ gals.	Raw china wood oil
10 gals.	Raw linseed oil, heat to 550° F (to make 575° F off fire), check with
2½ gals.	Linseed oil. Sprinkle on top of batch
4 lbs.	Sublimed litharge, allow to cook down to 450° F and reduce with
30 gals.	Hercules P W turpentine
30 gals.	Varsol in which has been dissolved
6 lbs.	Cobalt linoleate paste drier.

Physical Properties

Viscosity	F
Color	7
Gas test	O. K.
Setting time 80° F	1¼
Drying time 80° F	24 hours
Cold water test—18 hours	White—clears 1 hour
Boiling water test—1 hour	White in 15 minutes —clears in ¾ hour
Non-volatile	57.5%
Kauri reduction cracks	110%
Kauri reduction passes	99%

75-Gallon Rosin Varnish Formula

100 lbs.	Hercules I wood rosin, run to 450° F and add
7 lbs.	Hydrated lime, run to 560° F and add in a slow stream with stirring
37½ gals.	Raw china wood oil, and
9½ gals.	Raw linseed oil, run to 590° F and add
28 gals.	Raw linseed oil
8 lbs.	Sublimed litharge, run to 510° F and cook at this temperature until proper body is obtained (about 4 hours). Reduce with
40 gals.	Hercules P W turpentine
45 gals.	Varsol, in which is dissolved
4 lbs.	Cobalt linoleate paste drier.

Physical Properties

Viscosity	F
Color	6
Gas test	O. K.
Setting time 80° F	2½ hours
Drying time 80° F	24 hours
Cold water test—18 hours	Blue—clears in 40 minutes
Boiling water test—1 hour	White—clears in 1 hour
Non-volatile	55.2%
Kauri reduction cracks	158%
Kauri reduction passes	138%

25-Gallon Ester Gum Varnish Formula

40 lbs.	Ester gum
9 gals.	China wood oil
1 gal.	Bodied linseed oil
1 lb.	Litharge
4 oz.	Manganese acetate
1 oz.	Cobalt acetate
5 gals.	Turpentine
10 gals.	Mineral spirits

Heat 9 gals. wood oil and 35 lbs. ester gum to 400° F. Add 1 lb. litharge. Raise quickly to 580° F., gain 590 off fire; hold for light string from stirring rod. Add immediately 5 lbs. ester gum and 1 gal. of bodied linseed oil (3 hours). And at 440° F. add drier. Then thin.

Physical Properties

Viscosity	F
Color	6
Gas test	O. K.
Setting time 80° F	2½ hours
Drying time 80° F	24 hours
Cold water test—18 hours	Slightly discolored—clears in 5 minutes
Boiling water test—1 hour	O. K.
Non-volatile	55.0%
Kauri reduction cracks	46%
Kauri reduction passes	37%

50-Gallon Ester Gum Varnish Formula

36 lbs.	Ester gum
13 gals.	China wood oil
1½ gals.	Perilla oil
3½ gals.	Bodied linseed oil
1 lb. 11 oz.	litharge
6 oz.	manganese acetate
1½ oz.	Cobalt acetate
13½ gals.	Turpentine
12 gals.	Mineral spirits

Heat wood oil, perilla oil and ester gum to 400° F. Add litharge. Quickly raise to 580-590°, off fire. Hold for light string. Add bodied linseed oil. At 440° F add driers and reduce.

Physical Properties

Viscosity	E
Color	6
Gas test	O. K.
Setting time 80° F	2 hours
Drying time 80° F	24 hours
Cold water test—18 hours	O. K.
Boiling water test—1 hour	Slightly discolored—clears immediately
Non-volatile	51.5%
Kauri reduction cracks	116%
Kauri reduction passes	107%

75-Gallon Ester Gum Varnish Formula

40 lbs.	Ester gum
15 gals.	China wood oil
15 gals.	Bodied linseed oil
3 lbs.	Litharge
½ lb.	Manganese acetate
⅛ lb.	Cobalt
22 gals.	Turpentine
10 gals.	Mineral spirits

Heat wood oil and ester gum and 5 gals. linseed oil to 400° F. Add litharge. Raise quickly to 580°. Gain 590°. Hold for light string. Add balance of linseed oil. Reheat to 500° F until 2" to 3" string established from stirring rod. Cool to 440° and thin.

Physical Properties

Viscosity	F
Color	6
Gas test	O. K.
Setting time 80° F	2 hours
Drying time 80° F	24 hours
Cold water test—18 hours	Slightly discolored—clears in 10 minutes
Boiling water test—1 hour	Slightly discolored—clears immediately
Non-volatile	58.2%
Kauri reduction cracks	160%
Kauri reduction passes	147%

25-Gallon Amberol F-7 Varnish Formula

Amberol F-7	90 lbs.
Lead resinate	10 lbs.
China wood oil	22 gals.
Medium bodied linseed oil	3 gals.
Mineral thinner	45 gals.
Liquid cobalt drier	¼ gal.
Liquid manganese drier	⅛ gal.

Physical Properties

Cook the amberol F-7 and china wood oil to 560°, check with 3 gallons of linseed oil and hold for body at 500°. Pull from fire. Add lead resinate and thin to G body. Add liquid driers.

Viscosity	E
Color	5
Gas test	N. G.
Setting time 80° F	1 hour
Drying time 80° F	16 hours
Cold water test—18 hours	O. K.
Boiling water test—1 hour	O. K.
Non-volatile	46.4%
Kauri reduction cracks	93%
Kauri reduction passes	82%

50-Gallon Amberol F-7 Varnish Formula

Amberol F-7	95 lbs.
China wood oil	35 gals.
Medium bodied linseed oil	15 gals.
Fused lead resinate	8 lbs.
Cobalt acetate	6 oz.
Manganese acetate	4 oz.
Mineral thinner	73 gals.

Cook the amberol F-7, china wood oil and 5 gals. of linseed oil to 560°. Check with 10 gals. of linseed oil and hold at 500° F for body. Pull from fire. Add lead resinate and when all is in, add cobalt and manganese driers. Thin at 450° F.

Physical Properties

Viscosity	F
Color	5
Gas test	N. G.
Setting time 80° F	1½ hours
Drying time 80° F	18 hours
Cold water test—18 hours	O. K.
Boiling water test—1 hour	O. K.
Non-volatile	51.1%
Kauri reduction cracks	142%
Kauri reduction passes	134%

75-Gallon Amberol F-7 Varnish Formula

Amberol F-7	100 lbs.
China wood oil	47 gals.
Medium bodied linseed oil	28 gals.
Fused lead resinate	7½ lbs.
Mineral thinner	102½ gals.

Liquid cobalt drier sufficient to give metallic cobalt equal to .03% of the oil content.

Cook the amberol F-7, china wood oil and 14 gals. of linseed oil to 550° F. Check with 14 gals. of linseed oil, hold for body at 500° F. Pull from fire. Add lead resinate and thin to body F. Add liquid driers.

Physical Properties

Viscosity	D
Color	5
Gas test	N. G.
Setting time 80° F	1½ hours
Drying time 80° F	18 hours
Cold water test—18 hours	Slightly discolored—clears in 5 minutes
Boiling water test—1 hour	O. K.
Non-volatile	48.5%
Kauri reduction cracks	167%
Kauri reduction passes	156%

25-Gallon Amberol 226 Varnish Formula

Amberol 226	100 lbs.
China wood oil	25 gals.
Mineral thinner	38 gals.

Liquid cobalt drier sufficient to give cobalt metal equal to .03% of the oil content.

Cook the amberol and china wood oil to 460° F, and hold for body. Thin with mineral thinner to body F. Add liquid cobalt drier.

Physical Properties

Viscosity	E
Color	6
Gas test	O. K.
Setting time 80° F	1¾ hours
Drying time 80° F	18 hours
Cold water test—18 hours	O. K.
Boiling water test—1 hour	O. K.
Non-volatile	55.4%
Kauri reduction cracks	96%
Kauri reduction passes	85%

50-Gallon Amberol 226 Varnish Formula

Amberol 226	100 lbs.
China wood oil	50 gals.
Mineral thinner	61½ gals.

Liquid cobalt drier containing sufficient cobalt metal to equal .03% of the oil content.

Cook the amberol and china wood oil to 460° and hold for body. Thin to body F and add liquid cobalt drier.

Physical Properties

Viscosity	F
Color	5
Gas test	N. G.
Setting time 80° F	1¼ hours
Drying time 80° F	18 hours
Cold water test—18 hours	O. K.
Boiling water test—1 hour	O. K.
Non-volatile	53.2%
Kauri reduction cracks	182%
Kauri reduction passes	172%

75-Gallon Amberol 226 Varnish Formula

Amberol 226	100 lbs.
China wood oil	75 gals.
Mineral thinner	92 gals.

Liquid cobalt drier containing sufficient cobalt metal to equal .03% of the oil content.

Cook the amberol and china wood oil to 460° and hold for body. Thin to body F and add liquid cobalt drier.

Physical Properties

Viscosity	E
Color	5
Gas test	O. K.—passes
Setting time 80° F	1½ hours
Drying time 80° F	16 hours
Cold water test—18 hours	O. K.
Boiling water test—1 hour	O. K.
Non-volatile	51.9%
Kauri reduction cracks	222%
Kauri reduction passes	210%

25-Gallon XR-254 Bakelite Varnish Formula

China wood oil	22½ gals.
Varnish grade linseed oil (Spencer Kellogg & Sons Superior Oil)	2½ gals.
Bakelite XR-254	100 lbs.
Mineral spirits (Varsol)	27½ gals.
Dipentene (Hercules Powder Co.)	10 gals.

Procedure:—Oils and resin in kettle to 450° F in 25 minutes. Hold at 450° F for 22 minutes and thin immediately. Driers:—To each gallon of the above varnish add 1½ fl. ounces XK-1092 liquid cobalt drier and one ounce XK-944 lead manganese drier. (See 75-254 bakelite for drier formulae.)

Physical Properties

Viscosity	K
Color	6
Gas test	O. K.
Setting time 80° F	1½ hours
Drying time 80° F	16 hours
Cold water test—18 hours	O. K.
Boiling water test—1 hour	O. K.
Non-volatile	54.9%
Kauri reduction cracks	116%
Kauri reduction passes	90%

50-Gallon XR-254 Bakelite Varnish Formula

China wood oil	25 gals.
Bakelite XR-254	50 lbs.
Mineral spirits	22½ gals.

Procedure:—Oil and resin in kettle to 450° F in 30 minutes. Hold at 450° F for 20 minutes and thin at once. Driers:—To each gallon of the above varnish add 1½ fl. ounces XK-1092 cobalt drier and ½ fl. ounce XK-944 lead manganese drier. (See 75-254 bakelite for drier formulae.)

Physical Properties

Viscosity	D
Color	6
Gas test	O. K.
Setting time 80° F	1¼ hours
Drying time 80° F	16 hours
Cold water test—18 hours	O. K.
Boiling water test—1 hour	O. K.
Non-volatile	61.4%
Kauri reduction cracks	199%
Kauri reduction passes	188%

75-Gallon XR-254 Bakelite Varnish Formula

China wood oil	25 gals.
Bakelite XR-254	33⅓ lbs.
Mineral spirits	24 gals.
Dipentene	2¾ gals.

Procedure:—Oil and resin in kettle to 450° F in ½ hour. Hold at 450° F for 35 minutes and thin at once. Driers:—To each gallon of the above varnish add 2 fl. ounces of XK-1092 cobalt drier and 2 fl. ounces of XK-944 lead manganese drier.

XK-1092 Cobalt Drier

This is the usual type cobalt drier prepared by cooking cobalt acetate into linseed oil and rosins and reducing with mineral spirits. One fluid ounce of this drier contains 0.1 grains cobalt as metal.

XK-944 Lead Manganese Drier

This drier is prepared by dissolving 2.7 lbs. of lead manganese soligen in 1⅓ gallons of mineral spirits by warming. One fluid ounce of this drier contains approximately one gram of lead and .21 gram manganese as metal.

Physical Properties

Viscosity	D
Color	5
Gas test	O. K.
Setting time 80° F	1¾ hours
Drying time 80° F	16 hours
Cold water test—18 hours	O. K.
Boiling water test—1 hour	O. K.
Non-volatile	57.7%
Kauri reduction cracks	227%
Kauri reduction passes	219%

1G Varnish (Formula Not Given) Physical Properties

Viscosity	F
Color	6
Gas test	N. G.
Setting time 80° F	¾ hour
Drying time 80° F	18 hours
Cold water test—18 hours	Slightly discolored—clears in 5 minutes
Boiling water test—1 hour	O. K.
Non-volatile	40.5%
Kauri reduction cracks	112%
Kauri reduction passes	103%

2G Varnish (Formula Not Given) Physical Properties

Viscosity	E
Color	6
Gas test	O. K.
Setting time 80° F	¾ hour
Drying time 80° F	18 hours
Cold water test—18 hours	Slightly discolored—clears in ½ hour
Boiling water test—1 hour	O. K.
Non-volatile	35.6%
Kauri reduction cracks	100%
Kauri reduction passes	90%

3G Varnish Formula

Rezyl No. 113 solution containing 40% by weight of rezyl No. 113, 30% xylene and 30% "Hi-flash naphtha." Driers are present as linoleates equavilent to 0.4% lead, 0.05% manganese and 0.03% cobalt based on the weight of the rezyl.

Physical Properties

Viscosity	F
Color	6
Gas test	O. K.
Setting time 80° F	¾ hour
Drying time 80° F	24 hours
Cold water test—18 hours	White—clear in ¾ hour
Boiling water test—1 hour	Somewhat white—clears immediately
Non-volatile	40.7%
Kauri reduction cracks	77%
Kauri reduction passes	60%

4G Varnish Formula

Solution containing 35% solids, i. e., 17½% each of rezyl No. 113 and No. 1102 plus 32½% xylene and 32½% "Hi-flash naphtha," all percentages by weight. Driers present are 0.3% lead, 0.04% manganese and 0.02% cobalt based on the total weight of the combined rezyls.

Physical Properties

Viscosity	E
Color	5
Gas test	O. K.
Setting time 80° F	¾ hour
Drying time 80° F	20 hours
Cold water test—18 hours	White—clears in ¾ hour
Boiling water test—1 hour	Somewhat white—clears immediately
Non-volatile	35.8%
Kauri reduction cracks	37%
Kauri reduction passes	28%

5G Varnish Formula

Solution containing 35% by weight of rezyl No. 343-3, 32½% each of xylene and of "Hi-flash naphtha." Driers are the same as for 4G varnish.

Physical Properties

Viscosity	I
Color	6
Gas test	O. K.
Setting time 80° F	¾ hour
Drying time 80° F	24 hours
Cold water test—18 hours	White—clears in ¾ hour
Boiling water test—1 hour	Somewhat whitened—clears immediately
Non-volatile	36.4%
Kauri reduction cracks	39%
Kauri reduction passes	32%

Summary of Graphs

The graphs were plotted from the figures in the most complete exposure test tables and separate curves were prepared for initial and final failures. A "normal" curve would start in the zero region, where both durability and kauri reduction figures are small and proceed in a fairly

No. 1 Exposure Test (Wood)

45° South "Tide Level," Miami, Florida — **Date Exposed, Aug. 1, 1931**

Varnish.	Kauri reduction passed. P.C.	Initial failure graph No. 1.	Type.	Final failure graph No. 2.	Type and remarks.
25-R	16	10 days	Checking	4 weeks	Mildewing and bad cracking
50-R	99	4 weeks	Blistering	9 weeks	Mildewing and bad scaling
75-R	138	7 weeks	Checking	10 weeks	Mildewing and bad scaling
25-EG	37	3 weeks	Checking	4 weeks	Mildewing and bad cracking
50-EG	107	7 weeks	Checking	10 weeks	Mildewing and bad scaling
75-EG	147	7 weeks	Checking	10 weeks	Mildewing and bad scaling
25-F7	82	3 weeks	Checking	7 weeks	Mildewing and bad cracking
50-F7	134	7 weeks	Checking	10 weeks	Mildewing and bad scaling
75-F7	156	5 weeks	Checking	7 weeks	Mildewing and bad pitting
25-226	85	3 weeks	Checking	11 weeks	Mildewing and bad scaling
50-226	172	14 weeks	Blistering	22 weeks	Mildewing and bad scaling
75-226	210	7 weeks	Checking	14 weeks	Mildewing and bad scaling
25-254	90	32 weeks	Mildewed wood	41 weeks	Mildewing and bad pitting
50-254	188	18 weeks	Blistering	25 weeks	Mildewing and bad pitting
75-254	219	14 weeks	Blistering	18 weeks	Mildewing and bad scaling
1-G	103	4 weeks	Blistering	13 weeks	Mildewing and bad scaling
2-G	90	7 weeks	Blistering	12 weeks	Mildewing and bad scaling
3-G	60	7 weeks	Blistering	25 weeks	Mildewing and bad scaling
4-G	28	7 weeks	Blistering	13 weeks	Mildewing and bad scaling
5-G	32	4 weeks	Blistering	14 weeks	Mildewing and bad scaling

Note—1½ inches of each end protected by exposure rack.
"Tide Level"—panel immersed in sea water at high tide and exposed to sunlight at low tide.

straight line. To avoid possible differences due to non-volatile content a line was drawn for each group of varnishes made with the various resins.

In exposure No. 1, initial failure, the "R" and "EG" curves run about normal; "F-7" and "226" curves are normal except for the 75-gallon varnishes; "254" series curve runs opposite to the normal, although the 75-gallon varnish appears to be within limits, and 'G" series curve is irregular. In the final failure the data were the same.

In exposure No. 2, initial failure, the "R," "EG," "F-7" and "226" curves are quite straight and normal; "254" series curve runs opposite to normal and "G" series curve is straight but bears no relation to normal. In the final failure, the "R," "EG," and "F-7" curves are normal; "226" series curve is normal except for 75-gallon varnish; "254" series curve runs opposite to normal and "G" series curveis again straight but abnormal.

Graph No. 5, Exposure No. 5, Initial Failure

In exposure No. 5, initial failure, the "R' curve is normal except for 75-gallon varnish; "EG" curve is normal; "F-7" curve is normal except for 75-gallon varnish "226" curve is erratic due to the 50-gallon varnish; "254" curve runs opposite to normal and "G" curve is abnormal. In the final failure the "R," "EG," "F-7" and "226" curves all run quite straight and normal; "254" curve starts in general direction of other "254" curves or opposite to normal, and "G" curve is abnormal.

At the conclusion to this investigation, it is the desire of the committee to bring out the following points.

(1) In the older type varnishes where the resins had only slight durability, the addition of oil up to certain limits produced varnishes increasing in durability as the amount of oil was increased. Here the Kauri Reduction Test seemed to indicate the durability with fair accuracy as it measured the distensibility, which was apparently the determining factor.

(2) The complete solubility or miscibility of the standard kauri solution in gum turpentine with some of the varnishes tested has been questioned by members of the committee who conducted the tests. In the case of the glyptal type varnishes, a cloud was formed after adding the kauri solution which disappeared after thorough stirring. How uniform a film this mixture would produce is subject to controversy. With both the bakelite and glyptal type varnishes, the baked film under test for kauri reduction value seemed to split at one point after bending of the ⅛-foot rod, rather than form a definite series of fine cracks. On account of this, it was difficult to check the results from day to day, and this indicates non-uniformity of the mixture.

(3) The varnishes which required large amounts of kauri solution were thinned to a very low viscosity by this addition and, when films were prepared by flowing on the mixtures, the resulting thickness of these films, which were baked and bent, might have given a false value. A thick film always seems to crack more than a thin film of the same material, and to maintain the viscosity of the mixtures within reasonable limits it is suggested that more concentrated solution of kauri be used to overcome this variable.

(4) The variation of non-volatile content in the varnishes undoubtedly produces films of different thickness when applied by a brush. The glyptal type varnishes as one series have a spread of 35-40 percent in non-volatile content and poor agreement between durability and kauri reduction value. At the other extreme, the bakelite varnishes range from 55-60 percent in non-volatile content and the durability is not always indicated by the kauri reduction value. The other varnishes in this investigation run more true to form, but it should be noted that some of the 75-gallon varnishes are only slightly more durable than the 50-gallon lengths with the same resin, and in one of the exposures they are even less durable.

(5) Variations in formulation and cooking procedure would be liable to produce varnishes differing in durability and kauri reduction value from the results reported in this paper. It is quite evident that the durability of some of the newer type varnishes is not indicated by the kauri reduction value.

The committee wishes to thank the following for their assistance in preparing the varnishes and conducting the exposure tests:

American Cyanamid Company, Bakelite Corporation, E. I. du Pont de Nemours & Co., Forest Products Laboratory, Hercules Powder Company, Institute of Paint & Varnish Research, Keystone Varnish Company, Resinous Products & Chemical Company, Stroock & Wittenberg Corporation, and Sub-Tropical Testing Service.

Note: The committee plans to continue the above investigation with a study of moisture permeability tests and electric properties of the twenty varnishes, the results to be reported in a separate paper.

No. 2 Exposure Test (Wood)

45° South Hialeah, Florida — **Date Exposed, Aug. 1, 1931**

Varnish.	Kauri reduction passed. P.C.	Initial failure graph No. 3.	Type.	Final failure graph No. 4.	Type and remarks.
25-R	16	5 weeks	Checking	11 weeks	Bad cracking and bad scaling
50-R	99	16 weeks	Checking	22 weeks	Bad cracking and bad blistering.
75-R	138	20 weeks	Checking	24 weeks	Bad cracking and bad scaling
25-EG	37	10 weeks	Checking	15 weeks	Bad cracking and bad blistering
50-EG	107	20 weeks	Checking	24 weeks	Bad cracking and bad blistering
75-EG	147	22 weeks	Checking	30 weeks	Bad cracking and bad scaling
25-F7	82	11 weeks	Checking	15 weeks	Bad cracking and bad scaling
50-F7	134	20 weeks	Checking	24 weeks	Bad cracking and bad blistering
75-F7	156	23 weeks	Checking	26 weeks	Bad cracking and bad blistering
25-226	85	13 weeks	Checking	22 weeks	Bad cracking and cons. blistering
50-226	172	24 weeks	Checking	30 weeks	Bad cracking and bad scaling
75-226	210	28 weeks	Checking	30 weeks	Bad cracking and cons. blistering
25-254	90	50 weeks	Flaking at edges	*.....	
50-254	188	22 weeks	Checking	41 weeks	Bad checking cons. pitting
75-254	219	22 weeks	Checking	30 weeks	Bad cracking and bad blistering
1-G	103	28 weeks	Blistering	30 weeks	Bad cracking and bad scaling
2-G	90	28 weeks	Blistering	30 weeks	Bad cracking and bad scaling
3-G	60	28 weeks	Blistering	30 weeks	Bad cracking and bad scaling
4-G	28	28 weeks	Blistering	30 weeks	Bad cracking and bad scaling
5-G	32	28 weeks	Blistering	30 weeks	Bad cracking and bad scaling

Note—1 inch at top protected by exposure rack.
* Blank spaces indicate exposure test incomplete on date of publication.

No. 3 Exposure Test (Wood)

45° South (1 Hr. Water Spray at Noon), Washington, D. C. — **Date Exposed, Aug. 1, 1931**

Varnish.	Kauri reduction passed. P.C.	Initial failure.	Type.	Final failure.	Type and remarks.
[1]25-R	16	3 weeks	Checking	*23 weeks	Bad gloss and crumbling
[2]50-R	99	6 weeks	Checking	*38 weeks	Bad gloss and scaling
[3]75-R	138	9 weeks	Checking	16 weeks	Bad cracking and bad blistering
[4]25-EG	37	5 weeks	Checking	*25 weeks	Bad gloss and crumbling.
50-EG	107	7 weeks	Checking	27 weeks	Bad cracking and considerable blistering
[5]75-EG	147	10 weeks	Checking	16 weeks	Bad cracking and bad blistering
[6]25-F7	82	6 weeks	Checking	*38 weeks	Bad gloss and scaling
50-F7	134	7 weeks	Checking	20 weeks	Bad cracking and considerable blistering
[7]75-F7	156	11 weeks	Checking	16 weeks	Bad cracking and bad blistering
25-226	85	7 weeks	Checking	*45 weeks	Bad gloss and bad cracking
50-226	172	16 weeks	Checking	20 weeks	Bad checking and considerable blistering
75-226	210	20 weeks	Checking	45 weeks	Bad cracking and bad blistering
25-254	90				
50-254	188	16 weeks	Checking	†.....	
[8]75-254	219	10 weeks	Checking	42 weeks	Bad cracking and considerable blistering
1-G	103	10 weeks	Cracking	20 weeks	Bad cracking and considerable blistering
2-G	90	10 weeks	Cracking	20 weeks	Bad cracking and bad blistering
3-G	60	10 weeks	Cracking	45 weeks	Bad cracking and bad blistering
4-G	28	10 weeks	Checking	20 weeks	Bad cracking and bad blistering
[9]5-G	32	10 weeks	Cracking and checking	17 weeks	Bad cracking and bad blistering

[1] Removed Aug. 24, 1931. Replaced Nov. 4, 1931.
[2] Removed Sept. 14, 1931. Replaced Nov. 4, 1931.
[3] Removed Oct. 5, 1931. Replaced Nov. 4, 1931.
[4] Removed Sept. 8, 1931. Replaced Nov. 4, 1931.
[5] Removed Oct. 5, 1931. Replaced Nov. 4, 1931.
[6] Removed Sept. 14, 1931. Replaced Nov. 4, 1931.
[7] Removed Oct. 13, 1931. Replaced Nov. 4, 1931.
[8] Removed Oct. 13, 1931. Replaced Nov. 4, 1931.
[9] Removed Oct. 13, 1931. Replaced Nov. 4, 1931.
* Abnormal due to intermittent exposure; perhaps questionable.
Note—1 inch at bottom protected by exposure rack.
† Blank spaces indicate exposure test incomplete at date of publication.

No. 3 Exposure Test (Steel)

45° South (1 Hr. Water Spray at Noon), Washington, D. C. — **Date Exposed, Aug. 1, 1931**

Varnish.	Kauri reduction passed. P.C.	Initial failure.	Type.	
[1]25-R	16	4 weeks	Checked	
[2]50-R	99	6 weeks	Checked	
[3]75-R	138	9 weeks	Checked	
[4]25-EG	37	4 weeks	Checked	
[5]50-EG	107	6 weeks	Checked	
75-EG	147	7 weeks	Checked	
[6]25-F7	82	6 weeks	Checked	
[7]50-F7	134	7 weeks	Checked	
[8]75-F7	156	10 weeks	Checked	
[9]25-226	85	7 weeks	Checked	
50-226	172	10 weeks	Checked	NOTE: Not complete, but results are comparable to tests on wood panels.
75-226	210	15 weeks	Checked	
25-254	90			
50-254	188	20 weeks	Checked	
[10]75-254	219	11 weeks	Checked	
1-G	103	16 weeks	Checked and cracked	
2-G	90	10 weeks	Checked and cracked	
3-G	60	16 weeks	Checked and cracked	
4-G	28	10 weeks	Checked and cracked	
[11]5-G	32	9 weeks	Checked and cracked	

[1] Removed Sept. 2, 1931. Replaced Nov. 4, 1931.
[2] Removed Sept. 14, 1931. Replaced Nov. 4, 1931.
[3] Removed Sept. 30, 1931. Replaced Nov. 4, 1931.
[4] Removed Sept. 2, 1931. Replaced Nov. 4, 1931.
[5] Removed Sept. 14, 1931. Replaced Nov. 4, 1931.
[6] Removed Sept. 14, 1931. Replaced Nov. 4, 1931.
[7] Removed Sept. 21, 1931. Replaced Nov. 4, 1931.
[8] Removed Oct. 5, 1931. Replaced Nov. 4, 1931.
[9] Removed Sept. 21, 1931. Replaced Nov. 4, 1931.
[10] Removed Oct. 13, 1931. Replaced Nov. 4, 1931.
[11] Removed Oct. 5, 1931. Replaced Nov. 4, 1931.

No. 4 Exposure Test (Wood)

45° South Brooklyn, N. Y. — **Date Exposed, Aug. 1, 1931**

Varnish.	Kauri reduction passed.	Initial failure.	Type.	Gray wood at ends.	Final failure.	Type and remarks.
25-R	16	6 weeks	Checking	15 weeks	20 weeks	Bad cracking and crumbling
50-R	99	19 weeks	Checking	15 weeks	42 weeks	Bad cracking and blistering
75-R	138	24 weeks	Checking	15 weeks	60 weeks	Bad cracking and blistering
25-EG	37	9 weeks	Checking	15 weeks	34 weeks	Bad cracking and scaling
50-EG	107	19 weeks	Checking	15 weeks	60 weeks	Bad cracking and blistering
75-EG	147	28 weeks	Checking			
25-F7	82	10 weeks	Checking		34 weeks	Bad cracking and blistering
50-F7	134	24 weeks	Checking	15 weeks	60 weeks	Bad cracking and blistering
75-F7	156	28 weeks	Checking	15 weeks	60 weeks	Bad cracking and blistering
25-226	85	12 weeks	Checking			
50-226	172	26 weeks	Checking	15 weeks	50 weeks	Bad cracking and crumbling
75-226	210	56 weeks	Checking	15 weeks	60 weeks	Bad cracking
*25-254	90			†56 weeks	‡.....	
50-254	188	19 weeks	Checking			
75-254	219	18 weeks	Checking			
1-G	103			15 weeks		
2-G	90			15 weeks		
3-G	60			15 weeks		
4-G	28	41 weeks	Cracking	15 weeks	60 weeks	Slight cracking and bad blistering
5-G	32	56 weeks	Cracking	15 weeks	60 weeks	Slight cracking and bad blistering

* 40 weeks—quite dull and spotted; no visible defects; 80x magnification shows fine uniform interlacing checking. Duplicate panels from Nos. 2 and 3 exposures at same date show negative under 80x magnification.
† Peeling from edges.
Note—Entire surface of panel exposed.
‡ Blank spaces indicate exposure test incomplete at date of publication.

No. 4 Exposure Test (Steel)

45° South Brooklyn, N. Y. — **Date Exposed, Aug. 1, 1931**

Varnish.	Kauri reduction passed. P.C.	Initial failure.	Type.	Final failure.	Type and remarks.
25-R	16	5 weeks	Checking	20 weeks	Bad cracking and crumbling
50-R	99	15 weeks	Checking	34 weeks	Bad cracking and blistering
75-R	138	24 weeks	Checking	60 weeks	Bad cracking and blistering
25-EG	37	8 weeks	Checking	27 weeks	Bad cracking and rusting
50-EG	107	15 weeks	Checking	42 weeks	Bad cracking and blistering
75-EG	147	28 weeks	Checking		
25-F7	82	10 weeks	Checking	28 weeks	Bad cracking and rusting
50-F7	134	24 weeks	Checking	60 weeks	Bad cracking and blistering
75-F7	156	28 weeks	Checking	60 weeks	Bad cracking and blistering
25-226	85	11 weeks	Checking	42 weeks	Bad cracking and crumbling
50-226	172	26 weeks	Checking	60 weeks	Bad cracking and blistering
75-226	210	41 weeks	Checking		
*25-254	90			†.....	
50-254	188	15 weeks	Checking		
75-254	219	15 weeks	Checking		
1-G	103				
2-G	90				
3-G	60				
4-G	28	24 weeks	Checking		
5-G	32	24 weeks	Checking		

* 40 weeks—quite dull and spotted; no visible defects; 80x magnification shows fine uniform interlacing checking. Steel panel from No. 3 exposure at same date shows negative under 80x magnification.
† Blank spaces indicate exposure test incomplete at date of publication.

No. 5 Exposure Test (Wood)

45° South Madison, Wisconsin — **Date Exposed, Aug. 1, 1931**

Varnish.	Kauri reduction passed. P.C.	Initial failure graph No. 5.	Type.	Final failure graph No. 6.	Type and remarks.
25-R	16	6 weeks	Checking	12 weeks	Bad checking and bad gloss
50-R	99	18 weeks	Checking and gray wood	26 weeks	Bad checking and bad gloss
75-R	138	16 weeks	Gray wood	30 weeks	Bad checking and poor gloss
25-EG	37	8 weeks	Checking	13 weeks	Bad checking and poor gloss
50-EG	107	20 weeks	Gray wood	30 weeks	Bad checking and fair gloss
75-EG	147	28 weeks	Checking and gray wood	32 weeks	Bad checking and fair gloss
25-F7	82	12 weeks	Checking	27 weeks	Bad checking and bad gloss
50-F7	134	16 weeks	Gray wood	32 weeks	Bad checking and fair gloss
75-F7	156	15 weeks	Gray wood	34 weeks	Bad checking and fair gloss
25-226	85	22 weeks	Gray wood	30 weeks	Bad checking and bad gloss
50-226	172	22 weeks	Gray wood	34 weeks	Gray wood and fair gloss
75-226	210	32 weeks	Gray wood	50 weeks	Gray wood and fair gloss
25-254	90	50 weeks	Gray wood	50+ weeks*	
50-254	188	32 weeks	Gray wood	50+ weeks	
75-254	219	32 weeks	Gray wood and checking	40 weeks	Bad checking and considerable cracking
1-G	103	7 weeks	Gray wood	22 weeks	Cracking-flaking, good gloss
2-G	90	10 weeks	Gray wood	38 weeks	Cracking-flaking, good gloss
3-G	60	20 weeks	Gray wood	39 weeks	Cracking-flaking, good gloss
4-G	28	10 weeks	Gray wood	37 weeks	Cracking-flaking, good gloss
5-G	32	10 weeks	Gray wood	22 weeks	Cracking-flaking, good gloss

Note—¼-inch at top protected by exposure rack.
* Exposure test incomplete, Browne rates 25-254 as "probably better" than 50-254. Committee examination reports slight checking and slight cracking on 50-254 and no defects in 25-254 film.

Philadelphia Club

F. A. Wertz presented the first of two papers prepared by the Philadelphia Paint and Varnish Production Club. It was as follows:—

Metallic Driers

The Philadelphia club, for the past several years, have chosen as the object of their investigations the metallic soaps. Included in these studies have been such phases as the solubility or dispersion of metallic soaps in volatile thinners and the development of a method for the determination of this property[1]; the effect of soaps on the consistency and aging properties of paints[2]; their influence on the properties of the paint film, including durability under exterior exposure[3]; the relation of the method and means by which a soap is incorporated in a varnish on the various properties of the varnish[4], etc.

Last fall in the discussion of the work for the year, it was proposed that the influence of the metallic driers on the drying phenomena be investigated. The realization that information on this subject is both deficient and indefinite, and that the industry is interested in it due to the promotion of new chemical compounds of the drying metals, led to its selection as the subject for investigation by one group of our members.

Literature

A thorough survey of the voluminous literature on the subject disclosed a large number of reliable and accurate investigations, covering many of the various phases of the problem. Still a great deal of data, due to the lack of adequate control or to incomplete observations is questionable and must be discounted. Much of the literature on the drying phenomena of oils was also covered, although the subject under consideration is not the drying of oils, but the influence of or part played by metallic drier on the drying process.

It is not possible to include in this paper even very briefly abstracts of the entire literature, but a complete bibliography of the subject has been prepared. Consideration of the work of various investigators resulted in a feasible and probable hypothesis. Their investigations have suggested various theories covering drying, that is, the transition of liquid oil to a solid film. In recent years Morrell & Marks[5, 6], Long[7, 8, 9], Elbner[10], and Elm[11], based on original research and a compilation of the work of others have offered a logical picture of the mechanism of the drying process. They all suggest three overlapping reactions:—

1. Addition of oxygen at double linkages.

2. Polymerization or association of the oxidized oil molecules to colloidal dimensions.
3. Coagulation and gelation of these colloids.

It has been recognized that the incorporation of small quantities of certain metals hastens the drying of oils. These metals (primarily lead, cobalt, manganese and iron) have been called drying metals and driers, when in a form compatible with the oils. Many (Sabin[12, 13, 14], Thompson[15], Rhodes[16], Boughton[17], Boettinger[18], Walker[19], Wilborn[20], Doniger[21], and others) have studied methods of incorporation of the drying metals in oil and have also investigated the effects of pigmenting on the drying properties of the oil. Their results establish that some pigments react with the fatty acids of the oils to form metallic soaps. These soaps, especially in the case of lead, often exert drying actions.

There has been a great deal of investigation and many explanations offered for the effect of metallic driers. Since the early investigators of the field of paints and oils thought that the drying of oils was merely an oxidation of the liquid oil to solid products, it was natural that the first explanation offered for the reaction of the driers was that they accelerate the oxidation of the oils.

The early investigators noted that an oil during the drying process increased in weight. They assumed this was due to absorption of oxygen and a measure of the degree of oxidation. Several, Lippert[22], Weger[23, 24], and Fahrion[15, 25], observed when driers were added to the oils that this increase in weight was accelerated and accepted it as prima facie evidence that driers accelerate the oxidation of the oil. Other investigators, Genthe[27], Coffey[28], Zimmermann[9], Chataway[29], McCarter[30], and Sabin[12], noted that a simple measurement of the weight increase of the oil provided only a partial story, since during drying volatile products are liberated. They attempted to measure the true oxidation rate by either determining the weight increase of the oil and the volatiles liberated or by determining in a closed system the amount of oxygen consumed during the drying process. Although some of the methods used are open to criticism, sufficient evidence was obtained to establish that the oxidation is appreciably greater than that represented by the increase in weight of the film and that the oxidation rate is accelerated by metallic driers. It was also noted that solidification of an oil film containing driers occurred at a lower oxygen absorption than when there was no drier present, and that the true oxygen absorption of an oil containing no drier is appreciably higher than when drier is present.

In studying the drying of oil films, Gardner[31], Fahrion[25], Genthe[27], Coffey[28], and Marling[32], among others, have observed that there is an initial period during which practically no change in weight, in viscosity, in refractive index, or in oxygen absorption occurs. This has been called the induction period. They observed that metallic driers markedly shorten and in some cases practically eliminate this period.

Results Established

Previous investigators, as disclosed by this survey of the literature, have therefore established that metallic driers result in:—

1. More rapid oxidation of an oil film.
2. Earlier solidification of a film at a lower total oxygen content.
3. A decrease in the maximum total oxygen absorption of a film.
4. A shortening of the induction period of a drying oil.

There have been various theories offered explaining the functioning of the metallic driers. Engler developed the theory of the auto-oxidation of organic compounds. Genthe[27] and Fahrion[25] applied Engler's theory to linseed oils. They believe that the oxygen of the air oxidizes the drying metal, which in turn oxidizes the oil. Thus the mechanism of drying is essentially oxidation and the function of the drier is to hasten this reaction. This viewpoint has been accepted by many investigators.

Others, such as Ingle[33], go a little further in the description of the chemical function of driers. They suggest that the metal is oxidized by oxygen in the air to the peroxide, reduced by the oil, peroxidized-reduced, etc.

Many investigators believe that the action of the metallic driers is purely catalytic. Due to the wide diversion in opinions as to what constitutes catalytic reaction, it has been used to cover somewhat conflicting ideas. Some apparently consider that the metal through pure catalytic properties accelerates the oxidation while others suggest that the metals promote the formation of auto-catalysts which are oxidation products of the oil and in turn act as catalysts. Morrell[34] criticizes these catalytic theories. He feels that the metal takes an active part in the chemical reactions and that if it were catalytic the phenomena should be explained on a physical basis by the condensation or increase in concentration of the reacting substances at the surface of the catalyst.

The explanation, namely, that driers decrease the induction period and accelerate oxidation, did not fully satisfy some of the more recent investigators, especially since it does not explain the setting of the oil, when drier is present at a lower oxygen content. Their work suggests that the metallic driers also accelerate the association or polymerization of the oxidized oil molecules to colloidal dimensions, thus facilitating and speeding up the setting of the oil.

Long[7, 8] has recently explained the functioning of metallic driers based on a more modern conception of the drying of oils. He suggests that the normal mechanism of the setting or drying of oils involves the building up of oil molecules to form colloidal nuclei or micelles which coagulate or gel, and proposes that the colloidally dispersed metallic driers, which possess distinctly more polar characteristics, have greater tendencies toward definite orientation than the glyceride micelles. In this way both the acceleration of the drying process and the solidification at a lower oxygen content are explained.

Chase[35], Marling[32] Eibner and Pallauf[36], Samtleben[37], Wilborn[38], and others, have studied the various metallic soaps to determine whether the chemical radical with which the metal is combined influences its drying properties. It is practically the consensus of opinion of the reliable investigators of the subject that excepting as it effects "solubility" of the metal or has anti-oxygenic or similar properties, the radical with which the metal is combined is of no influence.

The "solubility" of the metallic driers has received considerable attention. This club found that the metallic soaps are not dissolved, but only colloidally dispersed in the volatile thinners. This work does not preclude the possibility that a few metallic ions are present. It is generally acknowledged that the effect of a drier increases with increasing degree of dispersion reaching its maximum the nearer the drier approaches molecular dispersion or solution. Many investigators, McIntosh[39], Marling[32], Pickard[40], and Gardner[31] have discussed the relationship of solubility to drying properties and generally have maintained that there must be "solution" of the metal for it to be effective.

Proposed Theory

The present investigators, after a careful consideration and discussion of the known data, evolved the following working hypothesis covering the function of the metallic driers in the drying process.

1. Metallic driers shorten the induction period by counteracting inhibitors or anti-oxidants naturally present in the oil.

2. Metallic driers accelerate the oxidation of the oil by taking an active part in the chemical reactions.

3. Metallic driers accelerate the polymerization, association and gelation of the oil.

It was apparent that accepting all available reliable data there still remained more phases to be investigated to determine the soundness of this proposed hypothesis than could be covered by any group in one year even by dividing the work among a number of investigators. The following important factors were therefore selected for investigation:—

1. Is the shortening of the induction period due to neutralization by the metallic driers of anti-oxidants present in the oil?

2. What is the mechanism of the effect of the metallic driers on the drying reactions?

3. Has the nature of the chemical combination of the drying metal an effect on its drying efficiency?

Experimental Data

Metallic Driers and the Induction Period

It is known that the natural drying oils contain anti-oxidants. These materials are primarily present in the unsaponifiable matter. A large proportion is in the mucilaginous material, which is removable as "break" by refining or by heating. Some of the anti-oxidants cannot be removed in this manner. Rogers and Taylor[41] found that the addition of a drier above a maximum does not further accelerate the drying of oils. This may mean that the drier combines with the anti-oxidants, and when all are removed the optimum drying conditions are obtained.

It was believed that a study covering the relative drying processes of a few selected oils in the presence and absence of a metallic drier would furnish reliable evidence whether driers shorten the induction period by counteracting the anti-oxidants.

A sample of raw linseed oil, of refined varnish oil, and of synthesized oil was selected. The raw oil contained the usual amount of anti-oxidants. The break had been removed from the varnish oil; that is, the anti-oxidants present in the mucilaginous material had been removed but the "soluble" anti-oxidants remained in this oil. The synthesized oil was a sample of fairly pure trilinolenic glyceride relatively free of anti-oxidants.

Lead drier (0.4 percent PbO based on the oil) was incorporated in a portion of each oil and the oxidation rate of the three oils with and without drier were determined.

The presence of the drier accelerated the oxidation in all three cases. There was practically no induction period in the case of trilinolenic glyceride, and no detectable differences in the early stages of the oxidation. The induction period of the refined oil was about half that of the raw oil, and in both cases the drier shortened the induction period.

These results definitely establish that the induction period is due to anti-oxidants or inhibitors in the oil, and indicate that any reduction in the induction period resulting from metallic driers is due to a neutralization of these anti-oxidants. Explanation of the mechanism of this action is offered later. This, however, is not the only action of the driers since even the oxidation of the pure trilinolenic glyceride was slightly accelerated. This seems to be in agreement with the results obtained by Tanaka and Nakmura[42], and by Rogers and Taylor[41], who studied the effect of added organic inhibitors to oils containing driers. They came to the conclusion that the inhibitors do not entirely destroy the action of the driers, and that both inhibitors and accelerators may exert their influence independently.

Metallic Driers Counteract the Anti-Oxidants

It would be interesting if it could be established whether the metallic driers counteract the anti-oxidants through chemical combination, by absorption or through coagulation and precipitation. The following tests throw a little light on this question. Four-tenths percent PbO was cooked into portions of the raw oil and of the refined (break free) oil by heating to 560° F. The samples were cooled and allowed to stand overnight in closed containers. An appreciable sediment had formed in the refined oil while the raw oil was clear. A similarly heated sample of the raw oil without drier showed a sediment.

The sediment in the refined oil was separated and washed free of oil. It was then analyzed and found to be lead stearate. Since drying tests showed a decrease in the induction period, and an increase in the rate of oxidation, sufficient lead had remained to counteract partly the anti-oxidants in the oil that had not been removed as "break" during the refining process. This may be taken to indicate that reaction between the metallic drier and the anti-oxidants is of a chemical nature.

It is a well-known and accepted fact that when raw oil is heated the nitrogenous mucilaginous substances present in it separate as "break." The sediment in the raw oil without drier was readily recognized as "break," and no attempt was made to identify it chemically.

Apparently in the case of the raw oil plus drier, the lead soaps and the mucilaginous materials acted as mutual protective colloids, thus preventing coagulation and precipitation.

Influence of Drier on Gain in Weight

Several members of the committee undertook to follow the chemistry of the function of the driers on the drying process, by making analyses of oils during the drying period. This work first developed into an investigation of known analytical methods and the selection of suitable ones, and the establishment of their accuracy. This work is omitted since its inclusion would unnecessarily lengthen this paper. Still for the benefit of future investigators, the methods adopted are submitted as an appendix.

As a preliminary experiment one of the members undertook to determine carefully the effect of drier on the change in weight during the exposure of an oil. A sample of trilinolenic glyceride was used. The sample was not absolutely pure, and contained some anti-oxidants (possibly traces of alcohol), as shown by the results obtained. A small percentage (.015 percent) of cobalt as a liquid drier was incorporated in a portion of the oil. The sample of trilinolenic glyceride, and the one containing the drier were flowed on glass plates and exposed under the same controlled conditions. The weight changes were determined by accurate weighing. Points of interest are (1) the elimination of the induction period, and the rapid acceleration of the increase in weight resulting from the cobalt; (2) the dry point in the case of the oil containing the drier is at an appreciable lower percentage gain in weight, and (3) the tendency of the two to reach the same final percentage increase in weight as shown by the results for 3,400 hours' exposure.

Influence of Driers on Oxygen Content

An elaborate series of tests was carried out covering the drying properties of lead linoleate, cobalt linoleate, linseed oil, linseed oil to which lead linoleate equivalent to 0.3 percent Pb was added, and linseed oil to which cobalt linoleate equivalent to 0.3 percent Co was added. Sufficient of each material was applied on 10 inch by 12 inch glass plates to give a film 0.1 mm. thick. This was in all cases approximately seven grams. In the case of the lead and cobalt linoleates, the materials were dissolved in naphtha and sufficient of this solution was applied that the solid film remaining after evaporation of the volatile was 0.1 mm. in thickness. The plates were exposed horizontally in a box containing a glass top and the necessary circulation of oxygen was provided by pumping air through the box. Samples were scraped off with a razor blade at intervals. These were analyzed for total percentage of oxygen, for oxygen present as peroxide and for iodine addition (iodine number)

It was early realized that in order to obtain comparable results, comparable conditions must be maintained. The effect of such a factor as difference in thickness of the film is demonstrated by the curves covering tests made exposing a very thin film of the raw oil. As would be expected, it oxidized at a very much more rapid rate than the thicker film.

The following observations are worthy of note:—

Oxygen Content by Ultimate Analysis

1. As would be expected, the raw oil oxidized at the slowest rate. The curve is concave upwards; that is, the rate at which it gained oxygen increased.

2. The oil plus lead or cobalt linoleates oxidized faster than the straight lead linoleate or cobalt linoleate. This is rather interesting. It can be explained on the basis of the lesser mobility of the straight driers and that the driers act as oxygen carriers to the oil.

3. In the case of the oil plus driers, at the end of three days, the percentage of oxygen is nearly the theoretical amount corresponding to two oxygen atoms at each double bond of the oil. After this time there was practically no further gain in oxygen content.

Peroxide Oxygen

In the early stages of drying peroxides play an important part, the oxygen presumably is taken up at the double bonds first as peroxide groups. In line with the gain in total oxygen content, the raw oil showed the slowest rate of gain in peroxides, although at its peak it showed as high a peroxide content as any of the others. It is interesting that in every case the peroxide value builds up to a maximum and then decreases, due to some other reactions. The results for lead linoleate could not be obtained, since in the course of the analytical determination the lead reacted with potassium iodide and precipitated lead iodide, giving erroneous results. The peroxide value for oil plus lead drier went up more rapidly than any of the others, indicating that lead is very effective in leading to the formation of peroxide groups in the oil.

Iodine Numbers

The double linkages are commonly measured by the iodine number. Increase in percentage of oxygen in the oil and driers as they age would be expected to involve corresponding decrease in the number of double bonds of the oil.

As was expected, the rate of decrease of iodine numbers was least in the case of the raw oil. This corresponds to the fact that the rate of gain of oxygen was least in this case.

The rates of decrease of iodine numbers for driers alone and oil plus driers, are very rapid during the first two days, so much so that they all dropped below an iodine number of 100. Of course, the iodine numbers of the lead linoleate and of the cobalt linoleate are less than for the oil, due to the presence of the metal atoms. Thus, the iodine number of lead linoleate is 131 if made from linseed oil having an iodine number of 180. The lower flat portions of the curves are therefore naturally displaced, due to the metal content of the driers.

This work has afforded some new evidence sustaining theories that have been previously proposed. It is the first published attempt to study the oxidation of the metallic driers themselves and to follow the effect of metallic driers on the drying of linseed oil by means of ultimate analysis.

Comparison of Drying Action of Different Compounds

The question arose as to the relation of the physical or chemical state of the metal on its effectiveness as a drier. It has been fairly well established that the metal must be in a dispersible form and that its effectiveness increases with the degree of dispersion or solubility. It has been customary to incorporate the drying metals in the oil in the form of soaps. It is probable that a compound of this type dissociates to form metallic ions. Must a metallic drier to be effective be present in the oil in a form capable of dissociation?

It is generally agreed that oxygen enters the oil at the double linkages. Lautenberg and Eibner have recently published some observations which suggest that the drying metal may loosely combine with the oil at places other than the carboxyl group, e. g., at the double linkages. Thus, the metal may accelerate the oxidation of the oil by activating both the double linkage and the atmospheric oxygen. The following experiments throw some light on this subject:—

Preparation of the Compounds

Aromatic organic compounds of lead and cobalt were prepared by one of the members of the group:—

Cobalt phenolate $Co(OC_6H_5)_2$
Lead phenolate $Pb(OC_6H_5)_2$
Cobalt cresylate $Co(OC_6H_4CH_3)_2$
Lead phenyl phenate $Pb(O.C_6H_4.C_6H_5)_2$.

Some of the lead phenolate and of the cobalt cresylate was introduced into the double bonds of linseed oil by means of the Friedel-Krafts reaction. Time did not permit of making the combinations with the cobalt phenolate and the lead phenyl phenate. The compound and from one to four times the stoichiometric proportions of linseed oil were mixed in a 500 cc. round-bottom flask, diluted with carbon tetrachloride and mixed for 10-15 minutes, using a small motor stirrer. Aluminum chloride was added and the reaction allowed to proceed for three minutes, when the reaction was stopped by the addition of hydrochloric acid, the stirring being continued until all the $AlCl_3$ was decomposed. The product was then separated from the aqueous solution and washed with cold and with hot water until free from lead chloride and acid.

Although no attempt was made to establish that the lead phenolate, or the cobalt cresylate, combined with the oil at the double bonds, from existing knowledge regarding the Friedel-Krafts reaction, this type of combination should occur. Although a rearrangement in the structure of the lead phenolate may take place, the assumptions that the lead or cobalt is fixed (does not dissociate) and that the radical of which it is a part is combined to the oil at its double bonds are justifiable; otherwise the metal should have been removed by the acid wash. The resulting product should therefore possess the same drying characteristics as if the metal were directly combined with the oil at the double bonds.

Solubility or Dispersibility of the Compounds

Both compounds were found to be insoluble in raw oil even with strong heating. The solubility or dispersibility of the compound resulting from the combination of linseed oil and lead phenolate was tested in a large number of materials. Heating to 100 deg. C. or to the boiling point of the solvent, if it was below that temperature, was used to promote solution. In the case of raw linseed oil, free fatty acids and rosin, considerably higher temperatures were used. The "solubility" was practically "nil" in every case, although it was classified as very, very slight (v.v.sl.) or nil, according to the depth of the color imparted to the solvents.

	Solubility.
(Abs) Ethyl alcohol	v.v.sl.
Ether	nil
Toluol	v.v.sl.
Petroleum ether	nil
Chloroform	v.v.sl.
Butyl alcohol	v.v.sl.
Carbon tetrachloride	v.v.sl.
Free fatty acids	nil
Tetrahydronaphthalene	nil
Dichlorbenzene	v.v.sl.
Raw linseed oil	nil
Benzaldehyde	nil
Butyl lactate	nil
Dibutyl phthalate	nil
Butyl stearate	nil
Butyl acetate	v.v.sl.
Formaldehyde	nil
Amyl alcohol	nil
Cellosolve	nil
Rosin	nil

Drying Properties of the Compounds

Comparative drying tests were made covering the four metallic derivatives of the aromatic compounds, lead linoleate and cobalt linoleate, as typical soaps, and of the compounds obtained through the Friedel-Krafts reaction of linseed oil with the lead phenolate and the cobalt cresylate. In those cases where the nature of the material would permit, it was finely ground before adding to the linseed oil. The amount of each material used was sufficient so that the oil would contain exactly 0.1 percent Pb or 0.05 percent Co. The material was mixed in the oil and the mixture allowed to stand in a closed container for 48 hours. It was then heated to 225° C. (437° F.) and held at this temperature for ten minutes, cooled, tightly closed and aged for 48 hours before drying tests were made. The oil plus the drier was poured on clean glass plates, which were held vertical for one minute to allow excess oil to run off, then placed in a horizontal position for ten minutes and then at 45° and observed periodically for drying by touching at a point midway

up the plate. The following designations were used:—

No perceptible change	Wet
Slight drying but film easily smeared by the finger	Sticky
Finger can be rubbed over surface without leaving an impression	Tack free
Film set hard	Dry

In the table below are listed the drying materials, the solubility, appearance of the oil and the drying results.

Logical conclusions from the results of this phase of the work are:—

1. Certain metallic aromatic organic compounds are comparable to the aliphatic organic soaps in their acceleration of the drying of linseed oil.

2. The metallic compound has to be dispersible in the oil and the metal has to be present in an available form to exert drying action on the oil.

Cobalt Chloride as a Drier

Several other tests were made which throw further light on this subject. Cobalt chloride was dissolved in ether and dispersed in linseed oil. It definitely accelerated the drying properties of the oil. The fact that this dissociable inorganic salt acts as a drier further establishes that dissociation or availability of the metal is a factor and that the radical with which the metal is combined has no effect on its properties as a drier. In order to determine more fully what constitutes availability, the following additional tests were made:—

Dry Material.	Dispersion.
Lead phenolate	Fair
Cobalt phenolate	Good
Cobalt cresylate	Good
Lead phenyl phenate	Incomplete
Lead phenolate treated linseed oil	Very poor
Cobalt cresylate treated linseed oil	Fair
Lead linoleate	Good
Cobalt linoleate	Good
Linseed oil alone	

* Wet, very slightly sticky.

Lead Tetraethyl as a Drier

Lead tetraethyl is a compound containing one of the drying metals in a form not readily available because all of the four valences of the lead are definitely fixed by combination with organic radicals. Some of this compound was obtained and a small quantity added to linseed oil. It readily dispersed in the oil, but had no accelerating effect on its drying properties. Since the lead is present in the higher oxidized or four-valent form in an apparently stable compound it was not anticipated that it would possess drying properties. An investigation of the effect of lead diethyl on the drying of oil should offer interesting data. The present investigators could not obtain any of the diethyl. Since it can be prepared, an investigation of its drying properties is suggested for some future investigator of this subject. In lieu of lead diethyl, iron carbonyl was tried.

Iron Carbonyl as a Drier

A sample of iron carbonyl (FeCO) was tested and found to readily disperse in the oil, and to exert a definite accelerating effect on the drying. In fact, for the same percentage of metal present in the oil, it was found as effective as iron linoleate, which is a recognized drier. The only explanation the authors can offer is that the iron is present in the carbonyl as ferrous iron and when dispersed in the oil is oxidized by the air to the ferric state and in transmitting the oxygen to the oil reverts back to the ferrous form. Acceleration of the oxidation of the oil is through repetition of this cycle (similar to the picture drawn by Ingle[33]).

From the results of this phase of the work, the committee evolved the theory that, to serve as driers, the metallic constituents should:—

1. Be readily dispersible in the oil, i. e., the metal should be in a form such that it assumes in the vehicle a high degree of dispersion. The closer this approaches to molecular dispersion the more effective its action. From this point of view the acid radical with which the metal is combined is important only in so far as it affects the degree of dispersion.

2. Be capable of existing in at least two stages of oxidation (valences). It would seem that the higher stage of oxidation (valence) should be the more stable one when considering the drying metal alone but should be unstable in the presence of the oil or other oxidizable material. On this basis the metal will tend to oxidize to the higher valence under the influence of oxygen or air, but the metallic compound of higher valence thus momentarily formed will oxidize the oil and the metal atom thereby return to the lower valence. This process may be repeated, indefinitely, if no materials such as anti-oxidants are present to break the cycle.

Resultant Oil.	Condition of film after 14 hours.	23 hours.	40 hours.
Cloudy	Wet	Wet	Sticky
Sl. darker	Sticky	Tack free	Dry
Dark	Tack free	Dry	Dry
Cloudy	Wet	Wet	Sticky
Sl. darker	Wet	Wet	Wet*
Dark	Wet	Wet	Wet*
Cloudy	Wet	Wet	Sticky
Dark	Tack free	Dry	Dry
	Wet	Wet	Wet*

Our picture, therefore, suggests that any compound which is readily dispersible in the oil and which is capable of going through the cycle involving oxidation and then reduction, while oxidizing the oil, should function as a drier. Organic driers as suggested by Marling[32] may be developed for the paint industry just as organic accelerators have been developed for the rubber industry.

Summary

An exhaustive and careful survey of the literature by the committee gave a somewhat disjointed but intriguing picture of the function of driers on the drying process of oils. It was possible, however, to assemble it into a coherent story. Based on the literature and on ideas of the members of the committee a working hypothesis was developed. This suggested further phases of experimental work to supply missing links of data. It was, of course, not possible to undertake the investigation of every phase, so the most important and promising items were selected.

The experimental work was divided into four parts as follows:—

1. Interrelation of driers, anti-oxidants and induction period.

2. Effect of metallic driers on the gain in weight during the drying process.

3. Effect of metallic driers on chemical changes occurring during the drying process.

4. Effect of the type of chemical combination of a metallic organic compound on its drying action.

It is felt that the results obtained have definitely established the fact that metallic driers shorten the induction period by counteracting the influence of anti-oxidants present in the oil. Ultimate analysis of oils, with and without driers at intervals during the drying process definitely established that driers accelerate the rate of oxidation, the formation of peroxides, and the saturation of the double bonds. Earlier solidification of the oil at lower oxygen content indicates that the driers also act to promote gelation of the oil. Preparation and study of a variety of metallic organic compounds showed that the drying action for a given percentage of a given metal is dependent on the dispersion and availability of the metal rather than on any specific effect of the organic radical with which the metal is combined or the type of compound involved.

Analytical Methods

Ultimate Analysis

Ultimate analyses are determined by the standard combustion method.

Essentially 0.08 gm. to 0.12 gm. of the oil or film is weighed into a porcelain boat and burned very carefully and completely in a silica tube heated electrically. A stream of pure dry oxygen is supplied at the proper rate. The complete combustion of any volatile products is insured by passing these products together with excess oxygen through copper oxide heated to redness. The products are water and carbon dioxide and are absorbed completely in "dehydrite" and "ascarite" respectively in carefully weighed absorption bottles. From the weight of water the weight and percentage of hydrogen in the sample is calculated. Similarly, the percentage carbon is found from the weight of carbon dioxide. Then, if the sample is a compound of carbon-hydrogen and oxygen only, oxygen is found by difference:—

% oxygen = 100 − % (% hydrogen + % carbon).

The apparatus consists of, in the order named:—

1. Cylinder of oxygen.
2. Bubble counter containing conc. sulphuric acid.
3. Bottle of ascarite.
4. Drying tower of dehydrite.
5. Combustion tube.
6. Nesbitt bulb of dehydrite.
7. Nesbitt bulb of ascarite covered with dehydrite.
8. Tube of ascarite (a safeguard if backing up occurs).
9. Bubble counter.

The combustion tube is packed as follows:—First a roll of copper oxide gauze is placed in the drawn-out end of the silica tube. Next is a 0.5 cm. layer of asbestos fiber followed by 44 cm. of copper oxide in granular or wire form. Next is 0.5 cm. of asbestos fiber and 0.5 cm. roll of copper oxide gauze. A 7cm. layer of cerium dioxide catalyst follows. Next is 0.5 cm. of asbestos and 0.5 cm. of copper oxide gauze. The porcelain boat occupies the next space and is placed not more than 1 cm. from the copper oxide gauze just mentioned.

A 7 cm. roll of copper oxide gauze is placed in the inlet end of the tube to prevent backing up of products.

As stated before, the Nesbitt bulbs contain dehydrite and ascarite—dehydrite being magnesium perchlorate trihydrate. Ascarite is asbestos fiber impregnated with sodium hydroxide. These Nesbitt bulbs are refilled whenever necessary to prevent loss of any water or carbon dioxide.

The method is entirely satisfactory, since oxygen can be checked within 0.1% with little difficulty if all precautions are observed and the analysis is performed conscientiously.

Peroxide Oxygen

Peroxide oxygen is determined by the Fahrion method as modified by S. Marks and R. S. Morrell—*Analyst 54*, 503 (1929).

From 0.2 to 0.5 gm. of the oil or film is weighed into a glass-stoppered iodine flask and dissolved in 25 cc. glacial acetic acid. Sometimes it is necessary to let the sample stand over night in order to effect solution.

Then 2 cc. of a cold saturated potassium iodide solution are added—the flasks stoppered tightly, sealed with a few drops of dilute potassium iodide and placed in the dark at room temperature for 18 to 24 hours. The samples are run in duplicate, together with two blanks and a benzoyl peroxide control. The amount of benzoyl peroxide used is 0.1 gm. The reaction period of 18 to 24 hours is varied so as to yield theoretical results with benzoyl peroxide. It is by this means that results on various days are corrected to a common basis. Temperature and other factors beyond the operator's control cause the results to vary even when the same reaction period is used from day to day. Hence it is necessary to utilize some means of correcting all results.

After the reaction period of 18 to 24 hours, the flasks are brought from the dark, 50 cc. of distilled water added, and the free iodine titrated with 0.1 N sodium thiosulphate using starch indicator.

Morrell and Marks advise using 1 cc. of 50% sulphuric acid in the reaction mixture, but this causes charring of the oil or film with consequent low results.

In the reaction, the peroxide groups liberate iodine from the potassium iodide, which is present in large excess. Each atom of oxygen liberates one atom of iodine if the reaction period is properly controlled. The amount of free iodine present, then, is a measure of the peroxide content of the oil. Only one of the two oxygen atoms is active, just as in the case of hydrogen peroxide. On this basis benzoyl peroxide contains 6.58% peroxide oxygen. If total peroxide oxygen is considered, i. e., both oxygen atoms in each group, benzoyl peroxide contains 13.17% peroxide oxygen.

The method does not yield a true result when the sample itself is unsaturated and capable of absorbing iodine from the reaction mixture. It is therefore necessary to regulate the size of sample and to make a correction for iodine absorbed at the double bonds. This correction is usually small.

Otherwise the method is very convenient, accurate, and entirely satisfactory. Benzoyl peroxide can be checked consistently within 0.1% peroxide oxygen.

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First Paint Industries Show

(Continued from page 35)

nish industries had an elaborate display of some of its many activities. An illuminated globe illustrating varnish made by blowing American tung oil was the eye-catching feature, in addition to which there was a display of many of the apparati developed and now in use for testing purposes.

Dr. H. A. Gardner was in charge.

Sun Oil Company

Photographs and a demonstration of the kauri butanol solvency test, to indicate the high solvent qualities of Sunoco spirit, were featured at this booth in the Jefferson room.

Lyman Quincy was in charge.

Wheeling Corrugating Company

A new pitcher-spout can with an absolutely smooth top was displayed by this company, together with a variety of drums having the clamp ring device, making it possible to open and close the drums by hand. Illustrated leaflets of the line were distributed to visitors.

Theodore Humphrey was in charge.

Wilson and Bennett Manufacturing Company

This company in its display featured its uniform steel containers, with placards setting forth the advantages of this type of steel package for shipping purposes, for retaining purity of a product and for safety, as well as for customer appeal. A handsomely illustrated brochure listing the whole line of the company was distributed to callers.

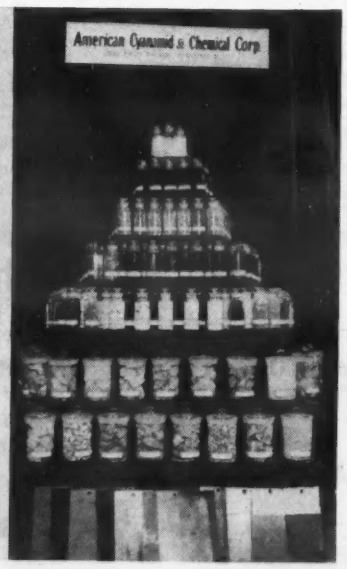
J. C. Bennett was in charge, assisted by Arthur Aitkins.

Production Clubs

Also having booths were the New England Paint and Varnish Production Club, the Cincinnati-Dayton-Indianapolis Club and the New York Club. The New England club showed several interesting panels of stone finishes and stencils, and the New York club had a variety of varnish test panels on view.

The trade papers of the industry also were represented by booths.

Nuodex Products, Inc.



American Cyanamid & Chemical Corporation

Exhibits at First Paint Industries Show

Banquet and Awards

At the annual banquet of the Federation of Paint and Varnish Production Clubs, held in the ballroom of the Mayflower, Saturday night, November 12, the award of the American Paint Journal went to the Philadelphia Club for its paper on metallic driers. It was presented by Everett W. Boughton and accepted by F. A. Wertz. Honorable mention was given to the papers of the Detroit club, the Montreal club, and of F. C. Atwood as an individual.

A new award, given by the New York club for the paper arousing the best discussion, was presented to the Louisville club.

Those Who Attended the Washington Meetings

A

Adams, R. F., Paint, Oil and Chemical Review, Chicago.
Anderson, Roy B., Brooklyn Varnish Company, Brooklyn.
Atwood, F. C., Craftex Company, Newton, Mass.
Athey, C. B., C. M., Athey Paint Company, Baltimore.
Auchincloss, William S., Oil, Paint and Drug Reporter, New York.
Ayers, Joseph W., Easton, Pa.

B

Babcock, Stephen C., John D. Lewis Co., Providence.
Bailey, Bernard H., Bird & Son, Inc., Islington, Mass.
Barlow, G. W., Marietta, Ohio.
Barlow, Hugh W., Marietta, Ohio.
Beer, Fred A., Western Dry Color Company, Chicago.
Belcher, V. A., New Jersey Zinc Company, New York.
Bidlack, V. C., Brandram-Henderson, Ltd., Montreal.
Binswanger, Jack G., Thomson Wood Finishing Company, Philadelphia.
Black, C. H., American Can Company, New York.
Bloch, J., Fred L. Lavanburg Company, Chicago.
Boggess, Robert C., Spencer Kellogg & Sons, New York.
Bonney, R. D., Congoleum-Nairn, Inc., Glen Ridge, N. J.
Booker, S. E., Peaslee-Gaulberg Paint & Varnish Company, Louisville.
Boughton, E. W., R. T. Vanderbilt Company, New York.
Bownes, Frank, Frank Bownes Company, Chelsea, Mass.
Brown, Arthur F., Glens Falls, N. Y.
Brown, H. E., Chicago.
Burnside, F. W., McKesson & Robbins, Inc., New York.
Butts, Homer D., H. D. Butts & Co., Pittsburgh.
Byrnes, James W., James W. Byrnes Shellac Company, New York.

C

Callahan, P. H., Louisville Varnish Company, Louisville.
Calo, John H., New York.
Carter, F. M., National Lead Company, New York.
Carthaus, W. J., Rock Deep Oil Corporation, Chicago.
Caspar, C. J., Pittsburgh Plate Glass Company, Pittsburgh.
Cathcart, P. H., Imperial Color Works, Cleveland.
Chandler, H. S., Canadian Industries, Ltd., West Toronto.
Cheesman, F. P., Cheesman-Elliot Company, Brooklyn.
Chinery, Frank P., Eagle-Picher Lead Company, Cincinnati.
Clark, C. W., E. I. du Pont de Nemours & Co., Inc., Everett, Mass.
Clark, John T., Eagle-Picher Lead Company, Cincinnati.
Clement, W. S., Camden, N. J.
Clipper, O. P., Adams & Elting, Chicago.
Cohen, A. J., C. A. Woolsey Paint & Color Company, Jersey City.
Cole, Everitt J., Hilo Varnish Corporation, Brooklyn.
Con'e, Samuel M., Sinclair Refining Company, Marcus Hook, Pa.
Connors, M. F., William Connors Paint Company, Troy.
Cook, C. R., Cook Paint & Varnish Company, Kansas City, Mo.
Cooke, G. W., Medinah Athletic Club, Chicago.
Coon, John Henry, Pittsburgh Plate Glass Company, Baltimore.
Cordon, E. B., Birmingham, Ala.
Cornish, E. J., National Lead Company, New York.
Cowen, M. I., New York.
Crary, A. V., Continental Can Company, New York.

D

Darby, Chas. A., Whiting-Adams Company, Boston.
Davis, H. B., H. B. Davis Company, Baltimore.
DeLore, C. P., DeLore Company, St. Louis.
Derr, H. A., Marietta, Ohio.
Dewar, John B., International Society of Master Painters and Decorators, Pittsburgh.
Dorney, R. W., E. Clinton & Co., Philadelphia.
Dowdy, Henry R., Charles H. Howell & Co., Philadelphia.
Drake, E. R., National Association of Paint Distributors, Chicago.
Dresser, C. H., Anderson-Prichard Oil Corporation, Oklahoma City.
Dunning, H. E., American Commercial Alcohol Corporation, Chicago.
Dunning, S. C., Muralo Company, Staten Island, N. Y.
Dwight, Maitland, Edward Smith & Co., New York.

E

Eastwood, Chas. W., U. S. Gutta Percha Paint Company, Providence.
Eberhart, M. J., American Can Company, Chicago.
Eddy, P. S., Porter Paint Company, Louisville.
Edgerly, D. W., Titanium Pigment Company, St. Louis.
Edwards, H. G., American Can Company, New York.
Eide, A. C., American Zinc Sales Company, Columbus.
Elwang, W. B., Sanders Brothers Company, Richmond, Va.
Emerson, R. W., Clean-Up and Paint-Up Campaign, Washington.
Emmons, T., American Zinc Sales Company, Columbus.
Everett, Ralph H., Keystone Varnish Company, Brooklyn.

F

Fasig, E. W., The Lowe Brothers Company, Dayton.
Fairbrother, E. M., Mobile.
Fearnley, George, Montreal.
Felton, Horace S., Felton, Sibley & Co., Philadelphia.
Ferguson, G. M., National Pigments & Chemical Company, New York.
Figgis, D. W., American Can Company, New York.
Finck, David N., Hanline Brothers, Baltimore.
Flynn, T. A., Butler-Flynn Paint Company, Washington.
Frayser, P. C., Mound City Paint & Color Company, St. Louis.
Frederickson, James A., John W. Masury & Son, New York.

G

Gardner, Henry A., Scientific Section, American Paint and Varnish Manufacturers' Association, Inc., Washington.
George, P. D., P. D. George Company, St. Louis.
Gerke, W. H., Sargent-Gerke Company, Indianapolis.
Gillon, George L., Wilson & Bennett Manufacturing Company, Jersey City.
Given, C. R., Bakelite Corporation.
Goetz, A. C., New York.
Gott, E. L., Chattanooga, Tenn.
Graves, Nelson M., McDougall-Butler Company, Buffalo.
Greene, Denison W., Oliver Johnson Company, Providence.
Griffin, C. W., Colonial Works, Brooklyn.

H

Hagar, I. D., Titanium Pigment Company, New York.
Haines, Edward C., Moorestown, N. J.
Hale, William L., The Debevoise Company, Brooklyn.
Hallett, R. L., National Lead Company, Brooklyn.
Hancock, E. H., Louisville Varnish Company, Louisville.
Hanline, Leon S., Hanline Brothers, Baltimore.
Hann, Oliver, Philadelphia.
Harth, P. E., National Pigments & Chemical Company, St. Louis.
Hastings, J. V., jr., Hastings & Co., Philadelphia.
Havey, M. L., New Jersey Zinc Company, New York.
Hayt, W. H., Eagle-Picher Lead Company, Chicago.
Healy, Daniel J., Spencer Kellogg & Sons Sales Corporation, New York.
Heckel, George B., Philadelphia.
Heinz, M. G., True-Tagg Paint Company, Memphis, Tenn.
Hemingway, H. J., R. B. H. Lacquer Base Company, Bound Brook, N. J.
Henlein, Carl A., Louisville.
Hense, O. P., New York.
Hock, Howard W., Hock Paint & Chemical Works, Phoenixville, Pa.
Hodgson, F. R., Cincinnati.
Hoefle, Emil, C. K. Williams & Co., Brooklyn.
Hoffman, Harry J., Baker Castor Oil Company, East Orange, N. J.
Holkesvig, Chester A., Tropical Paint & Oil Company, Cleveland.
Horgan, George V., general manager, N. P. O. & V. A., Washington.
Howard, Heermance M., Thibaut & Walker Company, Long Island City.
Howard, O. McG., Paint, Oil & Chemical Review, Chicago.
Howe, Kenneth J., Thibaut & Walker Company, New York.
Hunt, J. W., Washington.
Hursh, Robert, New Jersey Zinc Company, New York.

I

Ingram, J. E., Pittsburgh Plate Glass Company, Pittsburgh.
Innes, O. G., Innes Corporation, New York.
Irvin, H. J., National Lead & Oil Company, Pittsburgh.

J

Jacobs, A. E., Mac-Lac-Kasebier-Chatfield Corporation, New York.
Jakob, O. G., Continental Can Company, New York.
Jarden, William H., jr., McCloskey Varnish Company, Philadelphia.
Jauch, William M., Montreal.
Joachim, Benjamin, New York.
Johnson, H. M., Linden, N. J.

K

Kelly, N. W., Southern Varnish Corporation, Roanoke, Va.
Kempf, Joseph, Wilson Imperial Company, Newark.
Kendall, Clarence V., Kendall & Kendall, New Brunswick, N. J.
Kenney, J. A., Plainfield, N. J.
Kent, Lonore, Save the Surface Campaign, Washington.
Kiefer, Laurence, Washington.
Kingsborough, Harry, Krebs Pigment & Color Corporation, Cleveland.
Klein, Samuel, Calco Chemical Company, Bound Brook, N. J.
Knapp, G. S., Imperial Color Works, Glens Falls, N. Y.
Knauss, C. A., John Lucas & Co., Inc., Philadelphia.
Kortum, J. E., St. Louis.
Kurfees, J. F., jr., J. F. Kurfees Paint Company, Louisville.
Kurfees, J. F., sr., J. F. Kurfees Paint Company, Louisville.

L

LaCava, L. J., Continental Can Company, New York.
Ladd, E. V., The Densol Paint Company, Rocky Rim, Ohio.
Lambert, W. B., New York.
Lederer, E., Monroe, Lederer & Taussig, Philadelphia.
Lederer, S., Monroe, Lederer & Taussig, Philadelphia.
Licata, Francis J., Metasap Chemical Company, Harrison, N. J.
Lindsay, R. W., Pratt & Lambert, Inc., Buffalo.
Litter, D. H., D. H. Litter Company, New York.
Lodge, H. F., George S. Mepham & Co., East St. Louis, Ill.
Loebenberg, Dr. A. L., U. S. Industrial Chemical Company, New York.
Lord, James B., Boston Varnish Company, Everett, Mass.
Lotz, P. L., New York.
Luaders, Henry E., Laclede Paint Manufacturing Company, St. Louis.
Lucas, J. Spencer, Philadelphia.
Lundy, J. A., R. J. Brown Company, New York.

Mc

McCorkle, G. A., Krebs Pigment & Color Corporation, Newark.
McEwen, G. C., Imperial Varnish & Color Company, Toronto.
McFadden, T. J., Unfair Competition Bureau, American Paint & Varnish Manufacturers' Association, Washington.
McGhee, Albert, Enterprise Can Company, Pittsburgh.
McGhee, Walter, Enterprise Can Company, Pittsburgh.
McGovern, James P., Alcohol Committee, N. P. O. & V. A., Washington.
MacGregor, J. R., Eagle-Picher Lead Company, Cincinnati.
McKaig, Edgar S., Samuel H. French Paint Company, Philadelphia.
McMenamin, J. F., Felton, Sibley & Co., Philadelphia.
McNulty, Joseph A., New York.

M

Mangin, Joseph J., United Color & Pigment Company, Newark.
Mann, Henry S., Baltimore.
Marks, Walter F., National Lead Company, Milwaukee.
Martin, Wells, Martin Varnish Company, Chicago.
Maston, Willard E., Eagle-Picher Lead Company, Cincinnati.
Matlack, S. R., George D. Wetherill & Co., Philadelphia.
Messer, Ira R., Watson Standard Paint Company, Pittsburgh.
Miller, H. J., McDougall-Butler Company, Buffalo.
Mitchell, Robert E., Joseph Dixon Crucible Company, Jersey City.
Moore, Charles G., The Glidden Company, Lakewood, Ohio.
Moore, Robert J., Bakelite Corporation, Bloomfield, N. J.
Morpeth, William R., Krebs Pigment & Color Corporation, Newark.
Munn, R. J., Lilly Varnish Company, Indianapolis, Ind.
Murphy, E. D., Metal Package Corporation, New York.
Murray, David, Craftex Company, Boston.

N

Nelson, C. G., Socony-Vacuum Specialties, Inc., Long Island City.
Nelson, H. A., Research Division, New Jersey Zinc Company.
Neumann, R. M., New Jersey Zinc Company, Chicago.
North, W. B., East Orange, N. J.

O

Outcault, Harry E., St. Joseph Lead Company, New York.

P

Palmer, Fred C., New Jersey Zinc Company, New York.
Passof, H. A., Paramet Chemical Company, Long Island City.
Passonno, Fred J., M. G. Stoneman & Son, Albany.
Patton, Ludington, Pittsburgh Plate Glass Company, Milwaukee.
Paulsen, H. A., Chicago Paint & Varnish Production Club, Chicago.
Pearson, H. W., U. S. Kalsomine Company, New York.
Peters, E. V., St. Joseph Lead Company, New York.
Phelan, William J., American Can Company, Chicago.
Phillips, E. S., Devoe & Raynolds, Inc., New York.
Pine, Milton K., Muralo Company, Staten Island, N. Y.
Pinney, H. A., American Can Company, Chicago.
Pitt, William J., DeVilbiss Company, Toledo.
Plumb, R. A., Truscon Laboratories, Detroit.
Pohl, R. J., Oxidermo Products, Inc., Springport, Mich.
Praeger, Charles H., Bradshaw-Praeger & Co., Chicago.
Pratt, Malcolm F., Standard Oil Company of New York, Brooklyn.
Price, Burr, Oil, Paint and Drug Reporter, New York.
Priest, George H., Jr., American Paint Journal, St. Louis.
Pringle, William L., U. S. Gypsum Company, Chicago.
Probeck, E. J., Jones-Dabney Company, Louisville.

Q

Quigley, R. I., High Point, N. C.

R

Rainey, R. F., Pittsburgh Plate Glass Company, Pittsburgh, Pa.
Ramsay, David P., Paramount Paint & Varnish Company, Philadelphia.
Reardon, J. V., The Reardon Company, St. Louis.
Reeves, S. French, John T. Lewis & Bros. Company, Philadelphia.
Reilly, Hugh, Jr., Hugh Reilly Company, Washington, D. C.
Reizenstein, Louis J., Falk & Co., Pittsburgh, Pa.
Rice, Herbert W., U. S. Gutta Percha Paint Company, Providence.
Rice, Wayland W., U. S. Gutta Percha Paint Company, Providence.
Richie, William A., Standard Ultramarine Company, Huntington, W. Va.
Richter, William, E. I. Du Pont de Nemours & Co., Wilmington.
Robertson, D. W., National Lead Company, New York.
Robinette, R. B., Tropical Paint & Oil Company, Cleveland.
Roh, Charles J., Murphy Varnish Company, Newark.
Rollins, R. C., Phoenixville, Pa.
Romaine, E. V., New York.
Roosevelt, R. M., Eagle-Picher Lead Company, New York.
Rosen, M. A., Mantrose Corporation, Brooklyn.
Rowe, Harold, National Lead Company, New York.

S

Sampson, F. J., Sampson Paint & Color Company, Richmond, Va.
Sanderson, John McE., American Cyanamid & Chemical Corporation, New York.
Schafer, A. E., Sherwin-Williams Company, Cleveland.
Schafer, Harry, New York.
Schelling, A. A., John W. Masury & Son, Brooklyn.
Schinke, Carl H., Bisbee Linseed Company, Chicago.
Schmutz, F. C., Palmerton, Pa.
Schuey, Ralph C., Mountain Lakes, N. J.
Schumann, Carl J., Hilo Varnish Company, Brooklyn.
Schumann, Frank M., Hilo Varnish Company, Brooklyn.
Schwartz, S. L., L. H. Butcher & Co., San Francisco.
Seebach, E. J., Eagle-Picher Lead Company, Chicago.
Shannon, Robert K., N. P. O. & V. A., Washington.
Silberman, I., Paragon Paint & Varnish Corporation, Long Island City.
Sime, W. W., U. S. Color Card Company, Chicago.
Sinclair, H. M., Oakville, Ontario.
Smith, Caspar, Smith Chemical & Color Company, New York.
Smith, D. T., Flint Varnish & Color Works, Toronto.
Smith, Harry C., Harry C. Smith Company, Memphis.
Smith, H. Vernon, McDougall-Butler Company, Buffalo.
Sohl, George T., Ferbert-Scherndorfer Company, Cleveland.
Solinsky, R. S., Continental Can Company, New York.
Somers, Andrew L., Fred L. Lavanburg & Co., New York.
Somers, Fred L., Fred L. Lavanburg & Co., New York.
Sorrick, K. M., Oxidermo Products, Inc.
Sparrow, E. E., Imperial Varnish & Color Works, Toronto.
Stark, R. C., Pratt & Lambert, Inc., Buffalo.
Stauderman, A. E., Devoe & Raynolds, Inc., Freeport, N. Y.
Stearns, Frank N., Keystone Varnish Company, Brooklyn.
Stewart, J. K., Anderson-Prichard Oil Corporation, Chicago.
Stodder, C. K., Savogran Company, Boston.
Stollberg, William F., Stollberg Hardware & Paint Company, Toledo.
Stoneman, William H., M. G. Stoneman & Son, Albany.
Sullivan, P. J., E. Clinton & Co., Philadelphia.
Sulzberger, Frank L., Enterprise Paint Manufacturing Company, Chicago.
Sutherland, George, Baltimore.

T

Theurer, Frederick L., Pittsburgh Plate Glass Company, Milwaukee, Wis.
Thomas, A. B., W. H. Kemp Company, New York.
Thompson, J. V., Thompson & Co., Pittsburgh.
Tobey, D. M., Anaconda Sales Corporation, New York.
Tomlinson, G. H., Archer-Daniels-Midland Company, New York.
Trott, L. H., New York.
Trussell, E. H., Beckwith-Chandler Company, New York.
Turkington, V. H., Bloomfield, N. J.

U

Uehlinger, H., Egan & Hausman Co., Long Island City.

V

Verbyla, A. E., Standard Varnish Works, Linden, N. J.
Vickerman, C. H., Eagle-Picher Lead Company, Philadelphia.
Voss, A. F., American Paint Journal, St. Louis.

W

Wakefield, Harold A., Philadelphia.
Wakefield, H. L., Minnesota Linseed Oil Paint Company, Minneapolis.
Walker, R. O., Thibaut & Walker Company, Long Island City.
Walton, J. F., Jr., Aluminum Company of America, Pittsburgh.
Warnecke, E. H., Stroock & Wittenberg Corporation, New York.
Watson, J. D., Watson Standard Paint Company, Pittsburgh.
Weber, W. C., Southern Mineral Products Corporation, Piney River, Va.
Webster, H. E., Pratt & Lambert, Inc., Buffalo.
Wendling, A. C., Larkin & Co., Buffalo.
Werthan, Sid, Master Painters' Supply Company, Palmerton, Pa.
Wertz, F. A., Varcraft Works, Pottstown, Pa.
Wetherill, A. P., Wetherill & Bro., Philadelphia.
Wetlaufer, L. A., E. I. du Pont de Nemours & Co., Philadelphia.
White, G. D., Pittsburgh Plate Glass Company, Newark.
Whitescarver, James F., U. S. Industrial Alcohol Company, Baltimore.
Whiting, H. E., Bisbee Linseed Oil Company, Philadelphia.
Whittam, Frank F., John Lucas & Co., Philadelphia.
Wilkinson, H. L., Debevoise Company, Brooklyn.
Wilkinson, William H., Oliver Johnson & Co., Providence.
Williamson, Thomas A., Charles H. Howell & Co., Philadelphia.
Wishnick, R. I., Wishnick-Tumpeer, Inc., New York.
Woodlock, H. J., Schroeder Paint & Glass Company, Detroit.

Y

Yarnall, Walter P., Yarnall Paint Company, Philadelphia.

Z

Zappert, Theodore H., Scranton.
Zimmerman, E. E., E. E. Zimmerman Company, Pittsburgh.
Zintl, W. M., E. I. du Pont de Nemours & Co., Wilmington.
Zinsser, William, William Zinsser & Co., New York.
Zoller, M. M., Eagle-Picher Lead Company, Cincinnati.

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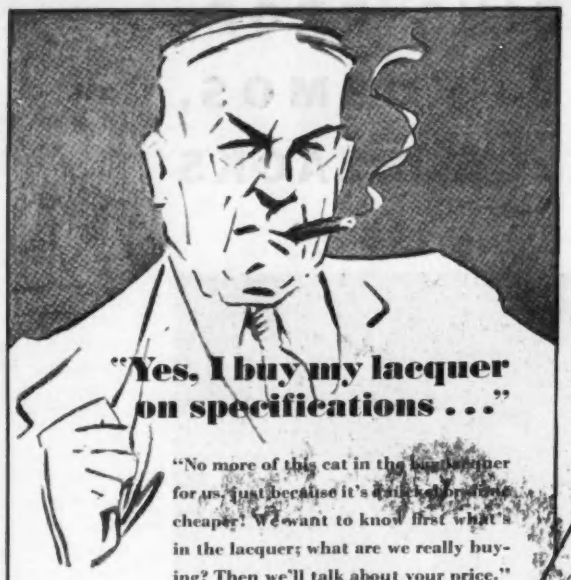

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Normal Butyl Aldehyde
BUTYL STEARATE
DIBUTYL PHTHALATE
ACETONE
DIACETONE
METHANOL
Synthetic

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